

THE WORKFORCE  SOLUTIONS GROUP

**An Assessment of Conditions in Massachusetts
Labor Markets in 2009: Comparisons of the
Numbers and Characteristics of Job Vacancies
with the Pool of Unemployed and Underutilized
Labor in the Commonwealth and Their
Implications for Workforce Development Policy**

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Introduction

Workforce development policymaking and program planning and operations at the state and local level are dependent upon the availability of both timely and statistically reliable information on on-going labor market developments. Knowledge of trends in employment growth and decline by industry and occupational area, the number of available job vacancies by industry and occupation and their geographic distribution across the state, as well as the size and characteristics of workers experiencing unemployment, underemployment, and other labor underutilization problems (hidden unemployment/mal-employment) is indispensable to the planning and design of a wide array of workforce development programs. These include job development and placement programs, career guidance and counseling for jobseekers, and job training. More efficient matching of available job seekers with job openings can help improve the efficiency with which state and local labor markets operate, thereby reducing both vacancy and unemployment rates and expanding the levels of employment and output across the state. Comparisons of findings on the relative numbers of job openings and unemployed/underemployed individuals can also indicate the need for economic development and job creation programs, including public sector job creation to help reduce imbalances between supply and demand.

Our paper is designed to carefully track and assess job vacancy developments in the Massachusetts economy over the past year (2009) and compare the estimated job openings in 2009 with those that prevailed in 2007 and 2008 and with trends in the country as a whole. While the job vacancy survey for 2009 IV did yield a slightly higher number of job vacancies than in 2008 IV, they were well below the levels prevailing in 2007 IV. Over the past year, both unemployment and underemployment problems in Massachusetts rose very sharply, substantially outpacing the number of job vacancies. Labor surpluses increased across the state in many industries and occupations, including key goods producing industries, transportation and material moving industries, real estate and leasing, and administrative support/waste management industries, including temporary help and labor leasing firms. Most blue collar occupations, including construction, production, and transportation operatives, and office workers/lower level service workers (food prep and service/building and ground maintenance) also faced very substantial surpluses of unemployed and underemployed workers in 2009.

The job vacancy data also will be examined over time for individual geographic regions of the state, for individual industrial sectors, and for major occupational groups. The full-time/part-time composition of job vacancies in Massachusetts over the past few years also will be examined and estimates of the number of full-time and part-time job vacancies will be generated. We also will review the changing educational requirements for job vacancies over the past few years.

To identify trends in labor market imbalances over time, we will compare the number of job vacancies with the number of official unemployed in the aggregate over the past three years. Ratios of the number of unemployed persons per 100 job vacancies will be calculated. A similar analysis will be undertaken for full-time job vacancies in the state. Estimates of the combined pool of open unemployed, hidden unemployed and labor force reserve also will be compared to the number of job vacancies in the state.

To help assess variations in labor market imbalances across industries and major occupational groups, we will estimate ratios of unemployed and combined unemployed and underemployed workers per job vacancy in these industries and occupational groups. Individual occupations with above average job vacancy rates in 2009 will be identified. The number of job vacancies will be compared to the number of unemployed workers in the same occupations to help identify occupations that appear to be in shortage. The final section of the paper will assess the implications of our findings for future workforce development policy in the Commonwealth and the design of job placement and job training/education programs.

Data Sources and Measures

The research findings appearing in this report are based on a variety of labor market measures (job vacancies, vacancy rates, unemployment and underemployment data, unemployment to job vacancy ratios) and data sources, both state and national. Job vacancies are available job openings in firms and government agencies for which active efforts are being made to fill the positions from outside the firm. The estimates of the numbers and characteristics (industries, occupations, full-time vs. part-time) of job vacancies in Massachusetts over the past few years are based on the semi-annual job vacancy surveys of the Massachusetts Department of Workforce Development.¹ The state job vacancy survey collects information on the total number

¹ For an example of the state job vacancy reports,

of nonfarm job vacancies in the state, their geographic distribution across the state, the industries in which they appear, their occupational characteristics, their educational and experience requirements, their full-time/part-time nature, and their temporary/seasonal/permanent nature. Unlike the national job vacancy survey, which only provides information on the major industrial sectors in which the vacancies exist, the state job survey produces data on the occupational characteristics of job vacancies, job vacancy rates by occupation, and their educational/part-time, full-time/temporary, permanent characteristics.² This information on the occupational characteristics of job vacancies, their educational/experience requirements, and their geographic locations across the state is indispensable for effective workforce development planning and program operations, including job development/placement activities and the selection of occupations for training.

Estimates of job vacancy rates by industry and occupation are also dependent on data on employment levels by industry and by occupation in the state. The Massachusetts Department of Workforce Development uses employment data by industry from the monthly payroll employment survey (the Current Employment Statistics program) to produce job vacancy rates by major industry and employment data by major occupation from the Occupational Employment Statistics program (OES) to produce estimates of job vacancy rates by occupational group. The job vacancy rate for an industry/occupation represents the ratio of the number of available job openings to employment in the industry or occupation at that time (V/E).³

Identification of the degree of labor imbalances both overall and in individual industries and occupations requires data on both the number of job vacancies and the number of unemployed persons (open plus hidden unemployed). The findings of the Current Population Survey (CPS) on the estimated numbers of unemployed persons in Massachusetts, both overall and by major industry and occupational group, will be used to estimate the overall ratio of official unemployed persons to job vacancies (U/V) in the state both in the aggregate and by

See: Massachusetts Department of Workforce Development, Massachusetts Job Vacancy Survey, Hiring Trends by Industry and Occupation: 4th Quarter 2007, Boston, 2008. These reports are prepared twice a year by the Massachusetts Department of Workforce Development.

² For a review of the monthly data outputs of the U.S. Bureau of Labor Statistics vacancy survey, See: U.S. Bureau of Labor Statistics, "Job Vacancies and Labor Turnover," web site, www.bls.gov. The job vacancy data can be combined with unemployment data from the Current Population Survey to produce estimates of unemployment/vacancy ratios.

³ Other analysts of vacancy data calculate the vacancy rate as the ratio of the number of vacancies to the sum of the vacancies and employed (V/V + E).

major industry and occupation. Earlier research for the state had revealed substantial variations in labor market imbalances across both industries and occupations. The goods producing industries (construction, manufacturing) and most blue collar occupations (construction, production/machine operators, and transportation/material moving) and clerical/administrative support occupations were characterized by the largest labor surpluses in our state in the spring of 2009.⁴

Findings from the CPS household surveys in Massachusetts for 2007, 2008, and 2009 also will be used to compare the total number of underutilized workers (open unemployed, hidden unemployed, and the labor force reserve) to the estimated number of job vacancies in the state and for the nation. During the economic recession, a growing number of workers in the U.S. either withdrew from active labor force participation or failed to enter the labor market as earlier projected by the U.S. Bureau of Labor Statistics. Some of these individuals express a desire for immediate employment even though they are not actively looking for work and, thus, will not be included in the ranks of the official unemployed. We refer to these individuals as members of the labor force reserve or the hidden unemployed. Another group of workers that has been growing extensively in both the U.S. and the state are the underemployed. These are employed individuals who are working part-time (under 35 hours per week) but desire full-time employment and are available to work full-time. We will produce estimates of the entire pool of underutilized labor (open unemployed, labor force reserve, and underemployed) in the state and compare the size of the pool of underutilized labor to the number of job vacancies in 2007, 2008, and 2009.

Job vacancies can exist for part-time or full-time positions and be temporary/seasonal or permanent positions. We will track changes in the number and percent of job vacancies that were part-time and full-time both overall and by major industry/occupation and compare full-time job vacancies to the number of unemployed looking for full-time work. Our findings will reveal a rising share of job vacancies that are part-time while the vast majority of the unemployed in Massachusetts are looking for full-time work. In 2009, the imbalance between full-time

⁴ See: Andrew Sum with Joseph McLaughlin and Mykhaylo Trubskyy, The Depression in Blue Collar Labor Markets in Massachusetts and the U.S.: Their Implications for Future Economic Stimulus and Workforce Development Policy, Center for Labor Market Studies, Northeastern University, 2009.

unemployed workers and full-time job vacancies was considerably higher than that for all unemployed workers and job vacancies in our state.

In the final section of the report, we will present estimates of job vacancy rates in occupations which appear to be in shortage – i.e., the number of vacancies exceeds the number of available unemployed workers. Being able to train and successfully place the unemployed into these shortage occupations would simultaneously boost employment and output in the state economy and help reduce the pool of unemployed workers.

Payroll Employment Developments in Massachusetts During the Economic Recession of 2008-2009

The primary focus of this paper is on changing labor market imbalances in Massachusetts during the course of the Great Recession, with an emphasis on the steep decline in job openings in Massachusetts and the sharp rise in the number of unemployed and underemployed persons across the state. The massive increase in unemployment in Massachusetts during 2008 and 2009 was primarily due to substantial job losses, many of a permanent nature. During the 4th quarter of 2007 just prior to the onset of the national economic recession, payroll employment in Massachusetts was estimated to be 3.288 million (Table 1). Our state lagged somewhat the national recession. The state's employment level increased slightly during the first 3 months of 2008 even though the nation's employment level declined over the same time period. Payroll employment during the 2nd quarter of 2008 was pretty flat at 3.301 million. By the end of the spring of 2008, Massachusetts started to lose jobs as a result of the economic recession. Payroll employment declined to an average of 3.266 million during the 4th quarter of 2008. The state's labor market deteriorated rapidly and steadily from the end of 2008 throughout calendar year 2009. By the 4th quarter of 2009, the state's employment level had fallen to 3.143 million. From the 1st quarter of 2008 to the 4th quarter of 2009, Massachusetts lost 159,000 jobs or nearly 5% of its employment. As the following pages will reveal, the steep economic downturn led to substantial declines in job vacancies in many firms across the state, especially full-time permanent jobs, and a substantial increase in unemployment and underemployment problems. Workers in most occupations, especially blue collar and service occupations, found themselves in a very deep labor surplus situation that will limit their re-employment prospects in a recovery.

Table 1:
Trends in Payroll Employment in Massachusetts, 4th Quarter 2007 to 1st Quarter 2010

Quarter/ Year	Employment (in thousands)
4th Quarter 2007	3,288
1st Quarter 2008	3,302
2nd Quarter 2008	3,301
3rd Quarter 2008	3,292
4th Quarter 2008	3,266
2nd Quarter 2009	3,179
4th Quarter 2009	3,143
1st Quarter 2010	3,142
Absolute Change, 1 st Quarter 2008 to 1 st Quarter 2010	(160)
Percent Change, 1 st Quarter 2008 to 1 st Quarter 2010	-4.8%

Source: Massachusetts Executive Office of Labor and Workforce Development, Current Employment Statistics (CES-790), tabulations by authors.

Time Trends in Job Vacancies in Massachusetts, 2006-2009

An assessment of labor demand conditions in state and local labor markets should be based on a variety of indicators including recent growth in the number of jobs by major industry and occupation, the growth in average hours of work on these jobs, and changes in the level and industrial/occupational composition of job vacancies.⁵ Job vacancies can be thought of as a measure of unmet labor demand. They represent the stock of job openings at a given time in a firm for which active efforts are being made to recruit new workers from outside the firm.

Data on job vacancies have been used in a number of different ways by economists and labor market analysts over the years. In his classic 1944 book titled Full Employment in a Free Society, the British economist William Beveridge argued that the attainment of the goal of “full employment” would require that there be somewhat more job vacancies than unemployed people.⁶ As Beveridge remarked, “jobs should wait rather than men.” When combined with

⁵ Employment levels are influenced by both changes in the demand and supply of labor.

⁶ For a review of Beveridge’s views on the use of job vacancies in helping identify full employment conditions in labor markets,

unemployment and other labor underutilization data, these job vacancies can also be used to identify the degree of labor imbalance in specific industries, occupations, geographic areas; i.e., whether there are shortages, near balance, or surpluses in different labor markets.

National data on job vacancies have been collected by the U.S. Bureau of Labor Statistics on a monthly basis since December 2000.⁷ The national survey (JOLTS) is used to provide estimates of the aggregate number of job vacancies in the nonfarm economy, including firms in the private-for profit, and non-profit, government sectors. Job vacancy estimates also are provided for major industrial sectors and for each of the four geographic regions but not for occupational groups. The BLS also provides estimates of job vacancy rates in the aggregate and in these industrial sectors.

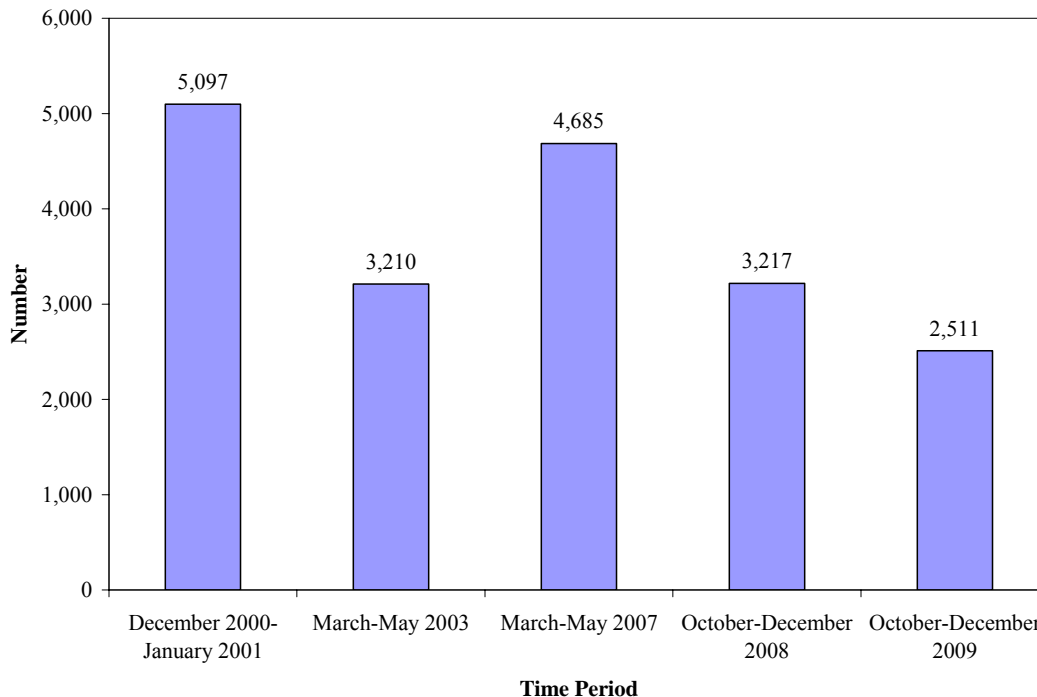
Trends in the total number of job vacancies in the U.S. for selected time periods between December 2000/January 2001 and October/December 2009 are displayed in Chart One. At the end of the national labor market boom in late 2000/early 2001, there were nearly 5.1 million job vacancies in the U.S. Job vacancies are very cyclically sensitive. During the recession of 2001 and the largely jobless recovery of 2002 to mid 2003, the number of job vacancies declined considerably, falling to 3.21 million in March-May 2003.

See: William Beveridge, Full Employment in A Free Society, Allen and Unwin, London, 1944.

⁷ For an introduction to the national job vacancy series and key vacancy concepts.

See: (i) U.S. Bureau of labor Statistics, “New Monthly Data Series on Job Openings and Labor Turnover Announced by BLS,” Washington, D.C., July 30, 2002. The national survey is known by its acronym JOLTS, the Job Openings and Labor Turnover Survey. It only collects job vacancies by industry not by occupation; (ii) Kelly A. Clark and Rosemary Hyson, “New Tools for Labor Market Analysis: the JOLTS Survey,” Monthly Labor Review, December 2001, pp. 32-37.

Chart 1:
Trends in Job Vacancies in the U.S. Selected Time Periods from
December 2000 – January 2001 to October – December 2009
(in 1000s, Seasonally Adjusted)

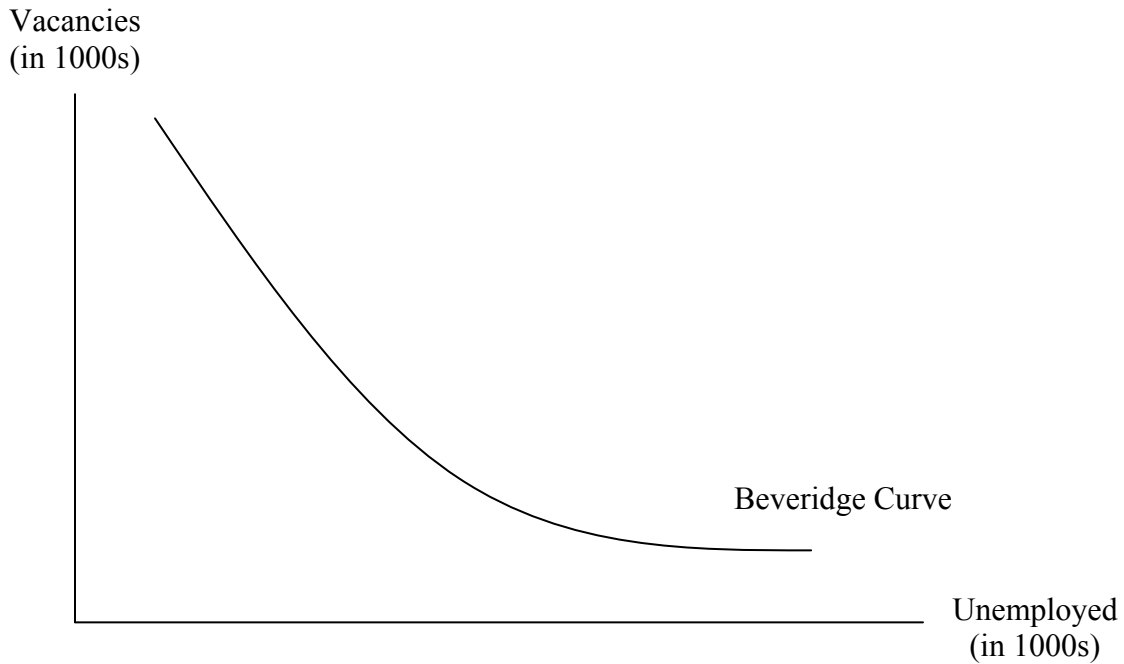


A graphical depiction of the so-called Beveridge curve for the U.S. is displayed in Chart 2. The statistical relationship between the number of job vacancies (V) and the number of unemployed persons (U) is typically portrayed as a hyperbolic relationship in which $V * U = k$ (a constant).⁸ (Chart 2). The number of unemployed is inversely related to the pool of job vacancies. As the national labor market improved between mid-2003 and the first half of 2007, the number of job vacancies rose sharply rising to 4.685 million at the end of this period. As the economy slowed and the recession set in during 2008 and 2009, job vacancies declined quite sharply, falling to only 2.51 million in the last quarter of 2009. This represented a near 47% drop in the aggregate number of job vacancies in the nation. By the end of 2009, massive labor surpluses existed in the U.S.⁹

⁸ See: Hoyt Bleakley and Jeffrey Fuhrer, “Shifts in the Beveridge Curve, Job Matching, and Labor Market Dynamics,” New England Economic Review, September/October 1997, pp. 3-17.

⁹ For an earlier review of job vacancy/unemployment relationships in Massachusetts at mid-decade, See: Andrew Sum, Paulo Tobar with Ishwar Khatiwada and Joseph McLaughlin, Massachusetts Labor Markets in Mid-2005: An Assessment of Job Vacancy and Unemployment Developments and Their Implications for Workforce Development Policy, Prepared for Workforce Solutions Group, Boston, 2006.

Chart 2:
Hypothetical Relationships Between the Number of Job Vacancies and the Unemployment Rate



Similar relationships between job vacancies and unemployment have prevailed in Massachusetts in recent years. Job vacancies in Massachusetts peaked in 2007, rising above 92,000 in the fourth quarter of 2007 shortly before total payroll employment peaked in the early spring of 2008. Unlike the BLS' monthly survey of job vacancies, the Massachusetts Department of Workforce Development undertakes its vacancy survey on a semi-annual basis, producing the job vacancy estimates for the second and fourth quarters of each year. By the end of 2008, job vacancies had fallen to 54,606 (Table 2). They fell again in the second quarter of 2009, but then rose up to nearly 61,800 in the final quarter of 2009. The number of job vacancies in the fourth quarter of 2009 was still 30,200 or 33% below its level in the last quarter of 2007.¹⁰ The number of job vacancies in the second quarter of 2009 was 34,600 or 41% below its level in the same quarter of 2007.

¹⁰ There are no seasonal adjustment factors for the quarterly job vacancies in Massachusetts. All of the estimates are seasonally unadjusted.

Table 2:
Trends in the Estimated Number of Job Vacancies in
Massachusetts in the Second and Fourth Quarters of 2007-2009

Time Period	Job Openings
2007 II	83,852
2007 IV	92,021
2008 II	74,971
2008 IV	54,606
2009 II	49,213
2009 IV	61,788
Change, 2007 IV – 2008 IV	-37,415
2008 IV – 2009 IV	+7,182
2007 IV – 2009 IV	-30,233 (-33%)
2007 II – 2009 II	-34,639 (-41%)

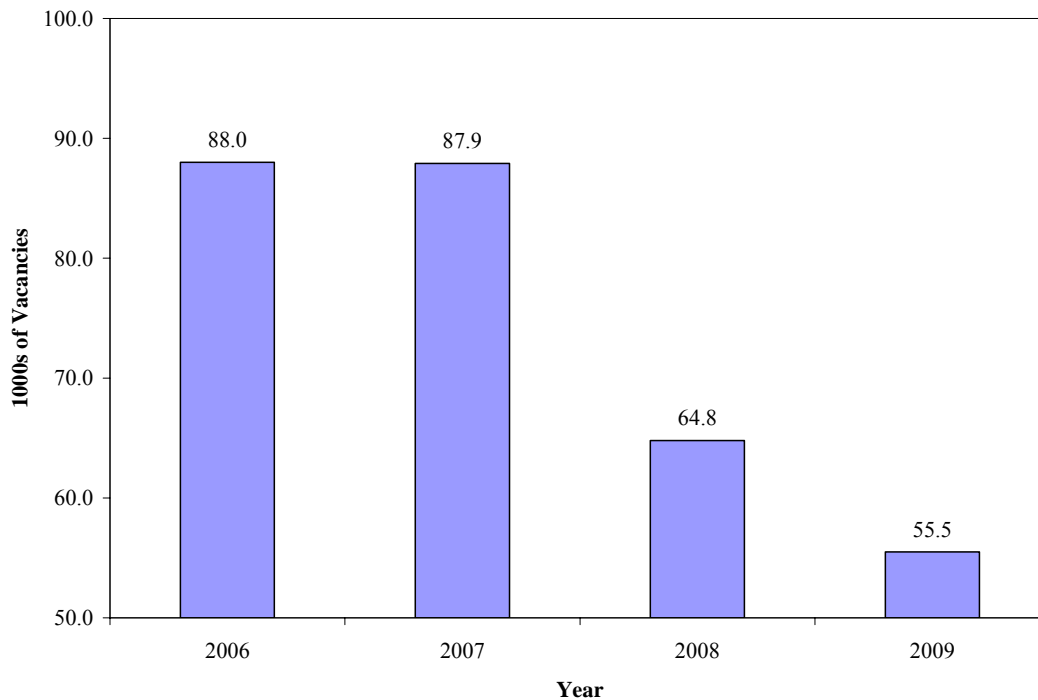
The estimated number of job vacancies in the second and fourth quarters of each calendar year from 2006 through 2009 were averaged to provide an estimate of the annual average number of job vacancies (Table 3 and Chart 3). Annual average job vacancies in 2006 and 2007 were nearly identical at just under 88,000 in both years. As the state economy entered the recession, job vacancies fell steadily and sharply over the following two years, dropping to 55,000 by 2009, a drop of 32,400 or 37% over its average level in 2007.

Table 3:
Trends in the Annual Average Number of Job Vacancies in Massachusetts, 2006 – 2009

Year	Number
2006	87,958
2007	87,936
2008	64,788
2009	55,500
2007 – 2009	-32,436 (-37%)

Source: Massachusetts Department of Workforce Development, Massachusetts Job Vacancy Survey, 4th Quarter 2009.

Chart 3:
Time Trends in the Annual Average Number of Job Vacancies in Massachusetts, 2006 – 2009
(in 1000s)



The job vacancy data are also used by the State Department of Workforce Development to produce estimates of job vacancy rates, both overall, for seven geographic regions, and for major industries and occupations. The job vacancy rate represents the value of the ratio of the number of job vacancies to the estimated number of employed (V/E). Estimates of overall job vacancy rates for the state as a whole and for seven economic development regions are displayed in Table 4 for the fourth quarters of calendar years 2007 through 2009.

In the fourth quarter of 2007, the job vacancy rate for the state was estimated to be 3.2%. The job vacancy rate declined sharply in 2008 to 1.9% by the fourth quarter, but then rose modestly to 2.2% by the fourth quarter of 2009. The rise in the overall vacancy rate is typically a good sign; however, as will be noted below, all of the increase in the number of job vacancies in the fourth quarter came in part-time and temporary/seasonal positions, with a rising share of the vacancies accompanied by no formal educational requirements.

Table 4:
Trends in the Job Vacancy Rates of Major Geographic Regions of the State, 2007 IV to 2009 IV
(Numbers in %)

	(A)	(B)	(C)	(D)
Geographic Area	2007 IV	2008 IV	2009 IV	Percentage Point Change, 2007 – 2009
Berkshire	4.1	2.1	3.0	-1.1
Cape and Islands	3.3	1.8	2.2	-1.1
Central	3.1	1.9	1.8	-1.3
Greater Boston	3.4	1.9	2.2	-1.1
Northeast	3.1	1.9	2.0	-1.1
Pioneer Valley	3.1	1.9	2.0	-.7
Southeast	2.9	1.7	2.2	-.7
Statewide, Total	3.2	1.9	2.2	-1.0

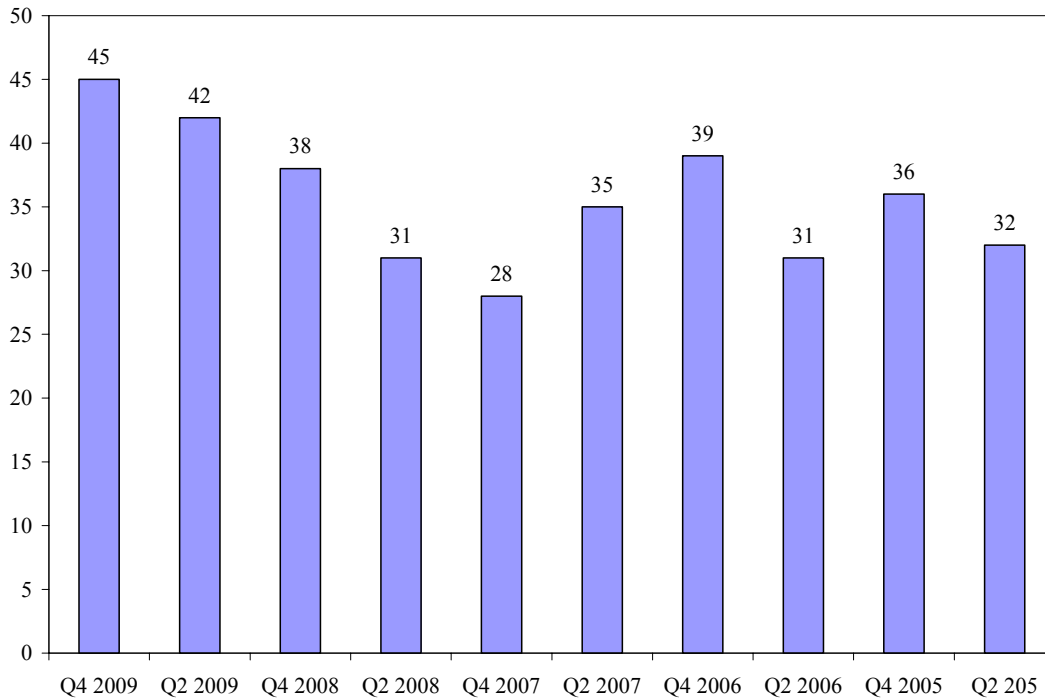
Source: Massachusetts Department of Workforce Development, Massachusetts Job Vacancy Survey, 4th Quarter 2008 and 4th Quarter 2009.

Job vacancy rates declined in each of the seven geographic regions of the state between the fourth quarters of 2007 and 2009. In the 2009 IV time period, these job vacancy rates varied from a low of 1.8% in the Central region (which includes Worcester County) to a high of 3.0% in the Berkshire region. The other five regions had vacancy rates in the 2.0-2.2 percent range. Unemployment rates substantially exceeded job vacancy rates in all seven regions at the end of 2009.

Trends in Job Vacancies by Full-Time/Part-Time Status

The Massachusetts Department of Workforce Development collects data on the characteristics of job vacancies, including their full-time/part-time status, their seasonal/permanent nature, their educational characteristics, and their occupational titles. Trends in the percent share of job vacancies in Massachusetts that were part-time over the past five years are displayed in graphical form in Chart 4. From 2005 to 2007, between 31 and 39 percent of all job vacancies were part-time, but the ratio dropped to a low of 28% in the fourth quarter of 2007 when total job vacancies were at their peak. Since then, as state labor markets continued to deteriorate, the share of job vacancies that were part-time in nature increased steadily and strongly, rising to 45% in the fourth quarter of 2009, a record high for the past five years.

Chart 4:
Percent Share of All Job Vacancies in Massachusetts that Were Part-Time From 2005-2009



The findings on the percent of job vacancies that were part-time and full-time over the past three years were used to estimate the number of full-time and part-time job openings. Full-time job vacancies declined substantially from the fourth quarter of 2007 to the fourth quarter of 2008 and basically remained at that low level in the fourth quarter of 2009. Over the 2007 IV – 2009 IV period, the number of full-time job vacancies fell by 32,272 or 48%. Part-time job vacancies fell by 5,000 between the 4th quarters of 2007 and 2008, but then rebounded strongly in the fourth quarter of 2009. In the fourth quarter of 2009, there were 2,000 more part-time job vacancies than their were in the fourth quarter of 2007, an increase of 8%.

Table 5:
Estimated Number of Full-Time and Part-Time
Job Vacancies in Massachusetts, 2007 II to 2009 IV

Time Period	(A)	(B)
	Full-Time	Part-Time
2007 II	54,504	29,348
2007 IV	66,255	25,765
2008 II	51,729	23,241
2008 IV	33,856	20,750
2009 II	28,543	20,689
2009 IV	33,983	27,804
Change, 2008 IV – 2009 IV	+127	+7,054
2007 IV – 2009 IV	-32,272 (-48%)	+2,039 (+8%)

The share of job vacancies that are part-time tends to differ quite considerably by major occupational group in the state. Evidence for the fourth quarter of 2009 reveals that part-time jobs were a much larger share of vacancies in service occupations, including building and grounds cleaning (58%) health care support, personal care, and food prep and serving (70%). Vacancies in office and administrative support occupations (48%) and in sales-related occupations (71%) also were frequently part-time in nature. Few management-related or professional occupations (with the exception of health care practitioners and technical workers including registered nurses) were found in the list of occupations with a high number of part-time vacancies.

Table 6:
Part-Time Vacancies as Percent of All Job Vacancies in Major
Occupations with the Highest Ratios of Part-Time Vacancies, 2009 IV

Occupational Group	Part-Time Share of Vacancies
Protective Service	44
Personal Care	46
Office and Administrative Support	48
Arts, Design, Entertainment	49
HealthCare Practitioners and Technical Workers	51
Transportation and Material Moving	55
Building and Grounds Cleaning	58
Health Care Support	62
Food Prep and Serving	70
Sales and Related	71

Trends in Labor Market Imbalances in Massachusetts: The Ratios of Unemployed/Underutilized Workers to Job Vacancies

To identify the degree of aggregate imbalance between the available demand and supply of labor in Massachusetts, we can compare changes in the ratios of the number of unemployed to job vacancies over time. Utilizing William Beveridge’s definition of full employment as a situation in which there are somewhat more vacancies than unemployed people, how far from full employment have Massachusetts labor markets moved over the past few years as labor market conditions deteriorated.

In Table 7, we display findings on trends in both the aggregate number of unemployed persons (16+) and the overall unemployment rate over the 2007-2009 period. State unemployment rates remained relatively low throughout, 2007 and the early months of 2008 before beginning a strong inexorable leap upward. The annual average unemployment rate in 2007 was only 4.6% with 158,700 unemployed persons per month. By 2008, the unemployment rate had risen to 5.8% and would jump to 9.3% in 2009, with the annual average number of unemployed rising above 290,000. Total unemployment in 2009 was 83% above its level in 2007.

Table 7:
Trends in the Annual Average Number of Unemployed Persons (16+) and
the Unemployment Rate in Massachusetts, 2007-2009

Year	(A) Unemployed Persons	(B) Unemployment Rate (in %)
2007	158,734	4.6
2008	183,500	5.8
2009	290,790	9.3
Change, 2007 – 2009	+132,056	+4.7 percentage points

Sources: Monthly CPS public use files, 2007 and 2009, tabulations by authors.

The steep decline in the number of job vacancies in the state over the past two years together with the very sharp rise in unemployment has substantially increased the ratio of the unemployed to job openings. In 2007, on average, there were 1.80 unemployed persons for every job vacancy in the state (Table 8). By 2008, the ratio of the unemployed to job vacancies had risen to 2.82 and would accelerate to 5.24 by 2009. A simple plot of the vacancy/unemployment levels for Massachusetts over the past three years clearly shows evidence of a hyperbolic Beveridge-type relationship between these two variables.

Chart 5:
The Graphical Relationship Between Job Vacancies and
Unemployment in Massachusetts 2007 to 2009

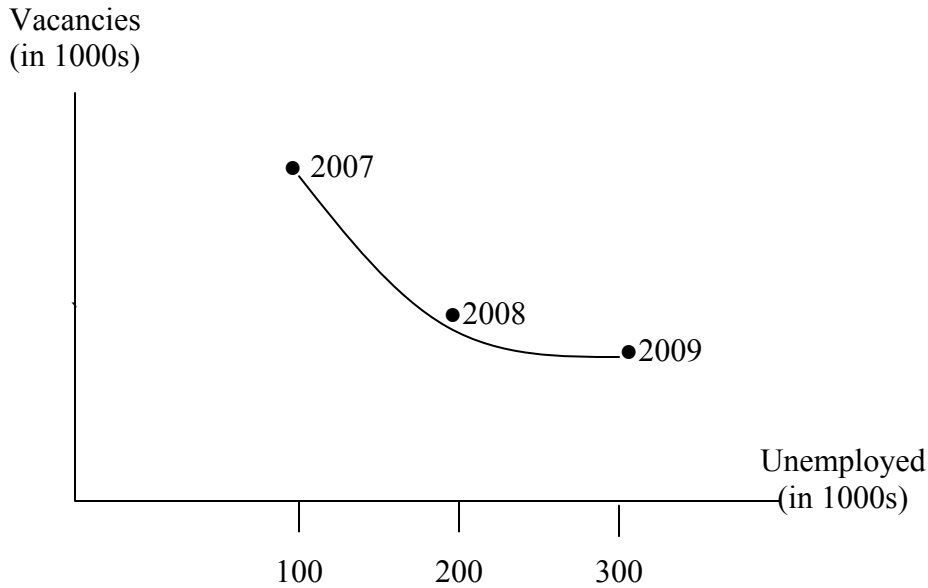


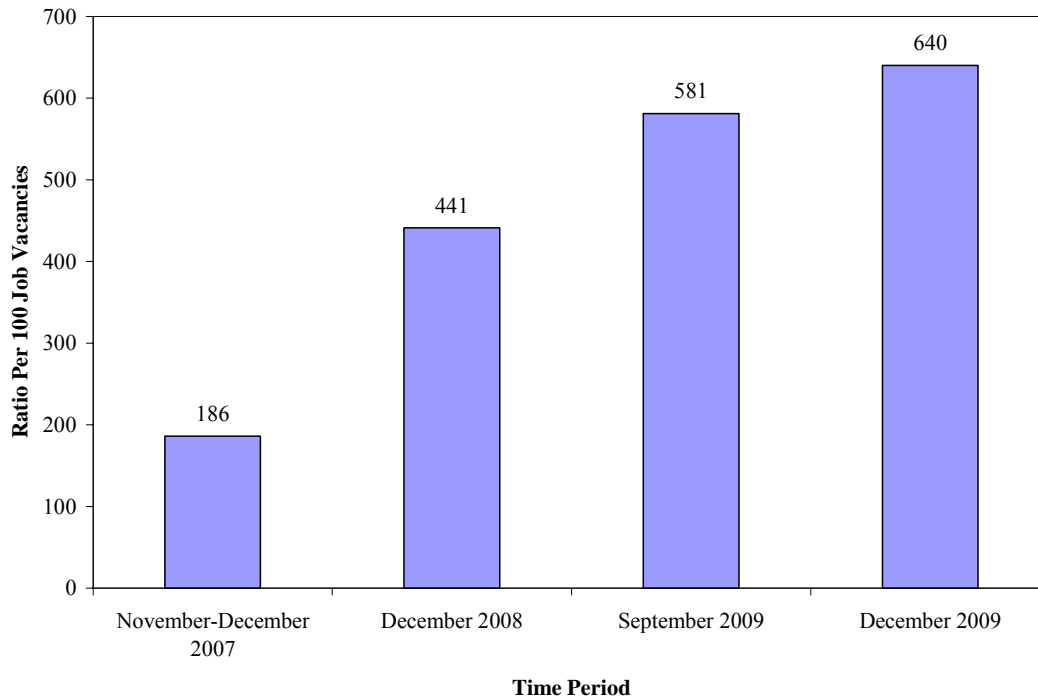
Table 8:
Trends in the Ratios of Unemployed Persons Per Job Vacancy in Massachusetts, 2007-2009

	(A)	(B)	(C)
Year	Job Vacancies	Unemployed	Unemployed/ Job Vacancies
2007	87,936	158,734	1.80
2008	64,788	183,500	2.82
2009	55,500	290,790	5.24

U.S. labor markets over the past few years also have been characterized by a dramatic shift in the ratio of the unemployed to job openings. In the final two months of 2007, immediately prior to the onset of the recession, the number of unemployed exceeded the number of job vacancies by a ratio of 186 per 100. By December of 2008, this ratio had more than doubled to 441 per 100, would rise further to 581 per 100 by September 2009, and hit 640 by December of 2009. In the nation's key blue collar employing industries such as construction and

manufacturing, the ratios of the unemployed to job vacancies have been hovering in the 20 to 30 to one range in recent months.¹¹

Chart 5:
Trends in the Ratio of the Number of Unemployed Persons (16+) in the United States Per 100
Job Vacancies, Selected Time Periods, November – December 2007 to December 2009
 (Not Seasonally Adjusted)



Sources: (i) U.S. Bureau of Labor Statistics, “Job Openings and Labor Turnover,” web site.
 (ii) Monthly CPS public use files, selected months, November 2007 to December 2009, tabulations by authors.

Earlier in this paper, we noted that the share of job vacancies in Massachusetts that involve full-time jobs has been declining steadily since the end of 2007. Unemployment problems in the state, however, remain overwhelmingly (85%) a full-time problem. To identify the degree of imbalance in the full-time labor market of the state, we compared the estimated number of unemployed workers seeking full-time work with the number of full-time job vacancies over the 2007-2009 period (Table 9). In 2007, there were 2.1 full-time unemployed workers for every full-time job opening across the state. By 2008, the ratio of the full-time

¹¹ See: Andrew Sum, Ishwar Khatiwada and Joseph McLaughlin with Sheila Palma, The Great Recession Among the Nation’s Blue Collar Workers: They Can’t Make It Here Anymore, Center for Labor Market Studies, Northeastern University, Boston, March 2010.

unemployed to job vacancies had risen to 3.5 times, and would more than double to 7.8 times in 2009. Thus, in 2009, there were nearly 8 unemployed workers seeking full-time work for every job opening offering full-time work, representing a massive labor surplus problem in the full-time labor market.

Table 9:
Trends in the Ratios of Full-Time Unemployed to Full-Time
Job Vacancies in Massachusetts, 2007-2009

	(A)	(B)	(C)
Year	Full-Time Vacancies	Full-time Unemployed	Full-Time Unemployed Per Vacancy
2007	60,380	124,378	2.1*
2008	42,792	148,150	3.5*
2009	31,263	243,682	7.8*

The Growth in the Pool of Underutilized Labor in Massachusetts, 2007-2009

The total number of unemployed persons in the state continued to increase steadily throughout 2008 and 2009, rising from 153,000 in the early months of 2008 to an average of slightly over 320,000 in the final two months of 2009.¹² The unemployment rate also rose steadily, increasing from 4.4 to 4.5 percent in early 2008 to 9.2-9.3 percent in late 2009. There are other pools of underutilized labor in the state, including the labor force reserve and the underemployed as well as the mal-employed. The labor force reserve consists of those jobless individuals who report to the CPS survey interviewer that they want a job, but are not actively looking for a job and, hence, are not counted as unemployed. In 2009, there were approximately 83,700 individuals in the labor force reserve in our state down slightly from its level in 2007 (Table 10). The underemployed are those individuals who are working part-time but desire full-time jobs and are available for full-time jobs. The underemployed typically work only one-half as many hours per week as the full-time employed; thus, they earn considerably less per week and frequently receive lower future returns from their part-time work experience.

During 2007, there were only 66,600 persons who were underemployed in our state. By 2009, however, there were more than 177,000 underemployed. Combining the unemployed,

¹² These monthly unemployment estimates are seasonally adjusted.

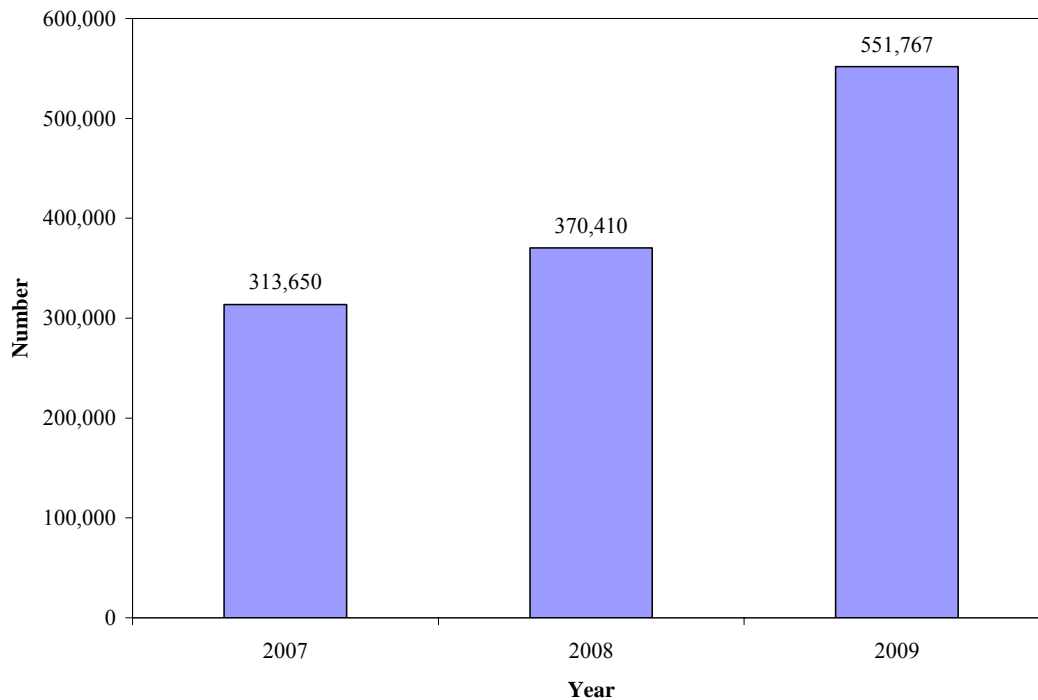
underemployed, and the labor force reserve yields the annual average, underutilized labor pool. In 2007, there were 313,650 members of the underutilized labor pool. By 2009, this pool of underutilized labor had risen to nearly 551,800, an increase of 238,000 in the past two years.¹³ The number of underutilized, working-age adults in Massachusetts during 2009 was equivalent to nearly 16% of the state's adjusted labor force. Clearly, this represents a major challenge for the workforce development system to assist these unutilized and underutilized workers in acquiring employment or a full-time job.

Table 10:
Average Number of Job Vacancies in Massachusetts in 2009 Versus Unemployed, Underemployed, and Hidden Unemployed Persons in the State in 2007, 2008, and 2009

Variable	(A) Average Number 2007	(B) Average Number 2008	(C) Average Number 2009
Job openings	87,936	64,788	55,500
Official unemployed	158,734	185,298	290,790
Underemployed (working part-time but desiring full-time job)	66,557	93,433	177,307
Hidden unemployed (labor force reserve)	88,359	91,679	83,670
Total underutilized	313,650	370,410	551,767
Number of underutilized persons per job opening	3.6*	5.7*	10.0*

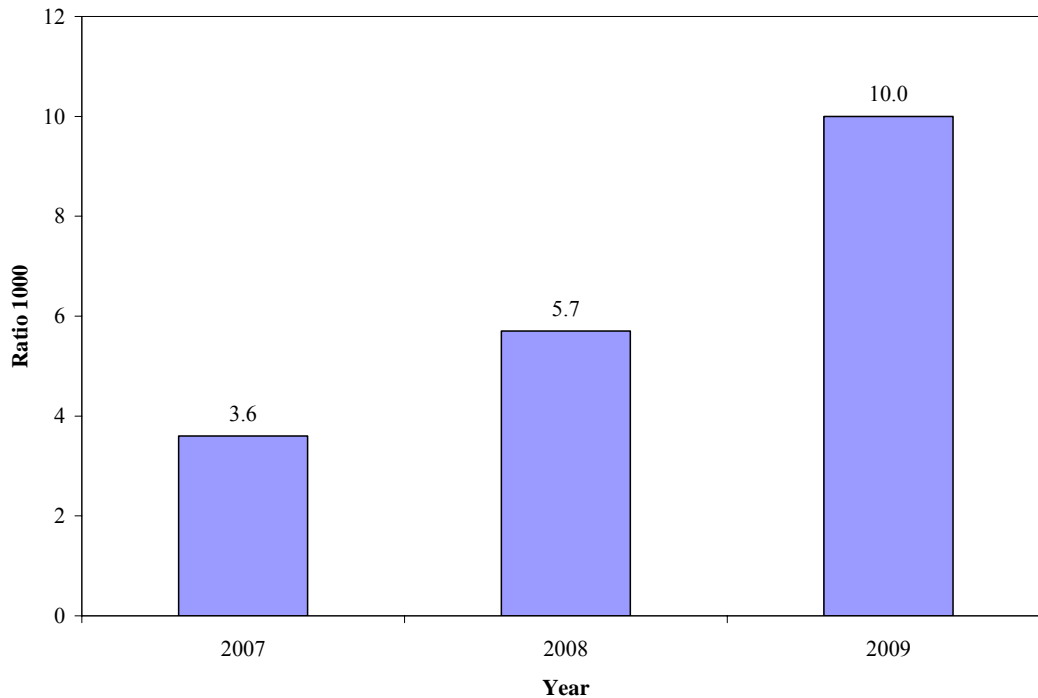
¹³ For a review of the pool of unutilized labor in Massachusetts in 2004 and 2005, See: (i) Andrew Sum, Ishwar Khatiwada with Sheila Palma, Current Massachusetts Labor Market Challenges and the Workforce Solutions Act of 2005, Prepared Testimony for the Massachusetts Legislature's Hearings on the Workforce Solutions Act, Boston, May 2005; (ii) Andrew Sum, Paulo Tobar, Ishwar Khatiwada, et. al, Massachusetts Labor Markets in Mid 2005.

Chart 6:
Trends in the Number of Underutilized Workers (16+) in Massachusetts, 2007 to 2009
(Annual Averages)



The pool of underutilized labor in the Commonwealth over the past few years has risen substantially relative to the aggregate number of job vacancies in the state. In 2007, there were 3.6 underutilized workers for every job opening, by 2008 due to a combination of declining job vacancies and rising labor underutilization problems, the ratio of underutilized labor to vacancies had risen to 5.7 to one, and in 2009 this ratio jumped to just under 10-1 as a consequence of a very steep rise in both unemployment and underemployment and a drop in vacancies. There were 10 unemployed, hidden unemployed, and underemployed workers for every job vacancy in the state in the past year. Nationally, the ratio was closer to 12-1. This represents a massive degree of labor surplus in both the Commonwealth and the nation.

Chart 7:
The Ratio of the Number of Underutilized Workers in Massachusetts to
the Total Number of Job Vacancies, 2007 to 2009



Labor Surplus/ Shortage Conditions Across Massachusetts’ Industries and Occupations During 2009

The Massachusetts job vacancy survey also provides job vacancy estimates for major industrial sectors and major occupational groups. As noted earlier, the job vacancy survey is bi-annual and conducted in the 2nd and 4th quarters of each year.¹⁴ The job openings data can be combined with unemployment data from the Current Population Surveys to estimate the number of unemployed persons there are for each job opening. We estimated the number of unemployed persons in Massachusetts for each major industry and occupational group for the 2009 calendar year. We averaged the industry and occupation job vacancy estimates for the 2nd and 4th quarters of 2009 to estimate the annual average number of job vacancies available during 2009.

The public use files from the Current Population Surveys allow us to identify the industrial and occupational characteristics of the unemployed. The unemployed are classified

¹⁴ See: Massachusetts Department of Workforce Development, The 4th Quarter 2009 Massachusetts Job Vacancy Survey: Hiring Trends By Industry, Occupation, and Region, Available at: <http://lmi2.detma.org/LMI/LMIjobvacancy.asp>.

into industries and occupations based on their most recent job or on the job from which they are on temporary layoff. During 2009, there were 290,790 unemployed persons in an average month. Construction, manufacturing, accommodations and food service, and retail trade were the top four industries in terms of number of unemployed persons (Table 11).

The unemployed to job vacancy ratio in the state during 2009 was approximately 5.5 to 1, representing a substantial labor surplus situation. The size of the ratio of the number of unemployed persons by industry to the number of job vacancies indicates the degree of labor surplus in each major industry in Massachusetts.¹⁵ The unemployed/ job vacancy ratios in Table 1 indicate that the degree of labor surplus varied substantially across industries of the state. In the construction/mining industries, there were 44 unemployed persons for every job opening during 2009. The unemployed/ job vacancy ratio in manufacturing was 19 to 1 (Table 11). In sharp contrast, the ratio was only 3 to 1 for information industries and the professional, scientific, and technical service industries and only 1.5 to 1 for health care and social assistance industries. The state's construction and manufacturing industries were characterized by very high labor surplus problems during 2009.

¹⁵ For an earlier review of the unemployed to job vacancy ratios for major industries and occupations in Massachusetts, see: Andrew Sum with Joseph McLaughlin and Misha Trubsky, The Depression in Blue Collar Labor Markets in Massachusetts and the U.S.: Their Implications for Future Economic Stimulus and Workforce Development Policies, Center for Labor Market Studies, December 2009

Table 11:
Ratio of the Number of Unemployed Persons to Job Vacancies by
Major Industrial Sector in Massachusetts, 2009

Industry	(A) Unemployed 2009 (Annual Averages)	(B) Job Vacancy 2009 Average	(C) Unemployed/ Vacancies
Utilities	763	60	12.7
Construction/Mining	39,715	899	44.2
Manufacturing	39,949	2,103	19.0
Wholesale Trade	3,686	1,234	3.0
Retail Trade	26,961	8,927	3.0
Transportation and Warehousing	6,856	1,322	5.2
Information	4,098	1,411	2.9
Finance and Insurance	11,975	2,718	4.4
Real Estate and Rental and Leasing	4,798	396	12.1
Professional, Scientific, and Technical Services	17,016	5,436	3.1
Management of companies and enterprises	0	897	0.0
Administrative and support and waste management services	20,852	1,966	10.6
Educational Services	18,228	3,867	4.7
Health Care and Social Assistance	20,250	13,066	1.5
Arts, Entertainment, and Recreation	7,731	1,425	5.4
Accommodation and Food Services	31,510	6,761	4.7
Other Services (Except Public Administration)	9,510	2,139	4.4
Public Administration	4,945	809	6.1
Total	290,790	55,501	5.2

Sources: (i) Massachusetts Department of Workforce Development, Massachusetts Job Vacancy Surveys for 2nd Quarter 2009 and 4th Quarter 2009; (ii) U.S. Census Bureau, Current Population Surveys, monthly public use files, tabulations by authors.

During the recession, a number of workers experienced cuts in their hours and many unemployed persons and labor market re-entrants settled for part-time jobs even though they desired full-time work. These employed workers are referred to as underemployed since they are working in part-time jobs but desire full-time employment. In the U.S., the 2008-2009 national recession has led to a substantial increase in the number of employed persons working part-time for economic reasons.¹⁶ As labor market prospects improve, many of these underemployed

¹⁶ See: Andrew Sum, Ishwar Khatiwada, Sheila Palma, Labor Underutilization Problems of U.S. Workers Across Household Income Groups At the End of the Great Recession: A Truly Great Depression Among the Nation's Low

workers will seek to increase their hours with their current employer or will try to obtain full-time employment elsewhere. This could result in an increase in the number of workers seeking jobs per available job opening. To examine how this might increase the labor surplus problems across industries, we estimated the ratio of the combined unemployed and underemployed to job vacancy ratios across industries.

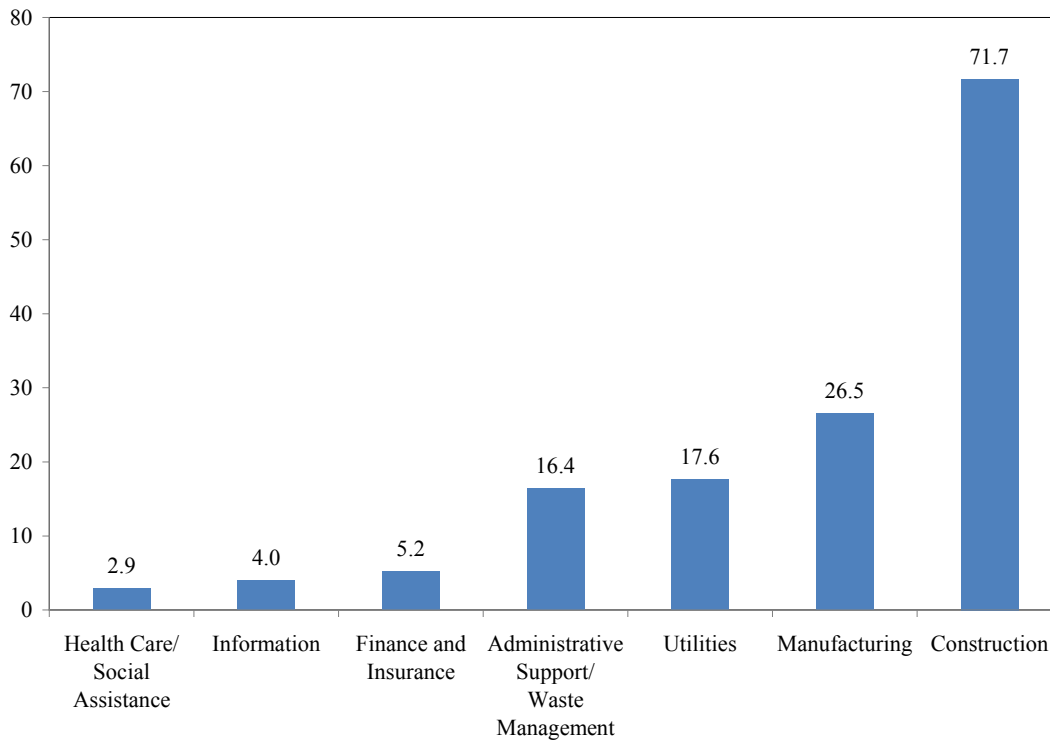
The unemployed and underemployed to vacancy ratios exacerbated labor surplus problems, especially for the state's goods producing industries (construction and manufacturing). During 2009, there were 8.4 unemployed and underemployed workers for every one job opening in Massachusetts (Table 12). Unemployed and underemployed to job vacancy ratios ranged from 2.9 to 1 in health care and social assistance industries to 26.5 to 1 in manufacturing industries, and to a high of nearly 72 to 1 in construction industries (Table 12 and Chart 8). The unemployed/underemployed to job vacancy ratio in construction industries was 24 times the ratio for health care and social assistance industries. The state's transportation and warehousing and administrative and support and waste management industries also had a very high number of unemployed and underemployed to vacancy ratios of 11 to 1 and 16 to 1, respectively.

Table 12:
Unemployed and Underemployed to Job Vacancy Ratios By Industry, 2009
(Annual Averages for Unemployed; 2nd-4th Quarter 2009 Averages of Vacancies)

Industry	(A) Unemployed, 2009 (Annual Average)	(B) Underemployed	(C) Job Vacancy 2009 Average	(D) Unemployed and Underemployed/ Vacancy
Agriculture, Forestry, Fishing, and Hunting	4,510	1,138	68	83.1
Utilities	763	293	60	17.6
Construction/Mining	39,715	24,776	899	71.7
Manufacturing	39,949	15,831	2,103	26.5
Wholesale Trade	3,686	3,010	1,234	5.4
Retail Trade	26,961	27,976	8,927	6.2
Transportation and Warehousing	6,856	8,004	1,322	11.2
Information	4,098	1,581	1,411	4.0
Finance and Insurance	11,975	2,139	2,718	5.2
Real Estate and Rental and Leasing	4,798	1,290	396	15.4
Professional, Scientific, and Technical Services	17,016	13,331	5,436	5.6
Management of companies and enterprises	0	0	897	0.0
Administrative and support and waste management services	20,852	11,485	1,966	16.4
Educational Services	18,228	11,021	3,867	7.6
Health Care and Social Assistance	20,250	17,978	13,066	2.9
Arts, Entertainment, and Recreation	7,731	4,850	1,425	8.8
Accommodation and Food Services	31,510	21,107	6,761	7.8
Other Services (Except Public Administration)	9,510	9,365	2,139	8.8
Public Administration	4,945	2,131	809	8.8
Total	290,790	177,306	55,501	8.4

Sources: (i) Massachusetts Department of Workforce Development, Massachusetts Job Vacancy Surveys for 2nd Quarter 2009 and 4th Quarter 2009; (ii) U.S. Census Bureau, Current Population Surveys, monthly public use files, tabulations by authors.

Chart 8:
Industrial Sectors in Massachusetts With the Lowest and Highest Ratios of Unemployed and Underemployed Persons Per Job Opening in 2009 (Annual Averages)



Findings from the state’s job vacancy survey also were used to publish job vacancy estimates for major occupational groups. We used the occupational characteristics of the unemployed identified in the CPS survey to estimate unemployed to job vacancy ratios for major occupational groups. The ratio of unemployed to job vacancies ranged from lows of .6 to 1 for health care practitioners and technical occupations to 1.1 to 1 for health care support occupations and 1.2 to 1 for life, physical, and social science occupations to highs of 17 to 1 for building, ground cleaners and maintenance, 22 to 1 for production occupations and 54 to 1 in construction/extraction occupations (Column D, Table 13). There were more job vacancies than unemployed persons for health care practitioners and technical occupations compared to 54 unemployed persons for every job opening in construction/extraction occupations.

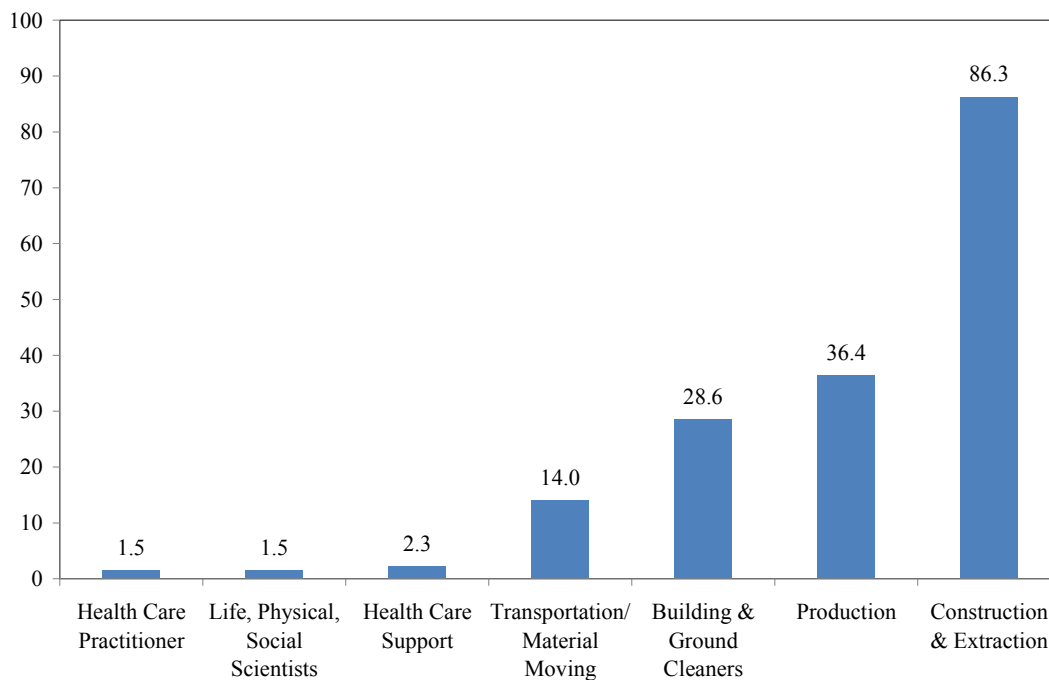
Table 13:
Unemployed to Job Vacancy Ratios and Unemployed and Underemployed to
Job Vacancies Ratios By Occupation, 2009 (Annual Averages for Unemployed;
2nd-4th Quarter 2009 Averages of Vacancies)

	(A)	(B)	(C)	(D)	(E)
Occupation	Unemployed (2009 Annual Average)	Underemployed (2009 Annual Average)	Job Vacancy 2009 Average	Unemployed/ Vacancy Ratio	Unemployed and Underemployed / Vacancy
Management	19,160	6,552	3,816	5.0	6.7
Business and Financial Operations	16,690	4,012	2,630	6.3	7.9
Computer and Mathematical	5,831	2,291	2,402	2.4	3.4
Architecture and Engineering	6,381	2,102	1,282	5.0	6.6
Life, Physical, and Social Science	1,701	567	1,470	1.2	1.5
Community and Social Services	2,204	1,772	1,349	1.6	2.9
Legal	1,826	952	236	7.7	11.8
Education, Training, and Library	9,580	9,052	2,752	3.5	6.8
Arts, Design, Entertainment, Sports, and Media	5,703	5,481	931	6.1	12.0
Healthcare Practitioners and Technical	3,445	5,405	5,771	0.6	1.5
Healthcare Support	3,469	2,932	3,161	1.1	2.0
Protective Service	2,175	3,488	902	2.4	6.3
Food Preparation and Serving Related	25,803	18,087	6,774	3.8	6.5
Building and Grounds Cleaning and Maintenance/Farming, Forestry/Fishing	20,393	14,889	1,235	16.5	28.6
Personal Care and Service	6,173	10,205	2,043	3.0	8.0
Sales and Related	18,915	24,579	8,635	2.2	5.0
Office and Administrative Support	43,967	18,438	5,577	7.9	11.2
Construction and Extraction Installation, Maintenance, and Repair Workers	35,442	21,684	662	53.5	86.3
Production	8,545	3,431	1,115	7.7	10.7
Transportation and Material Moving	20,806	12,612	919	22.6	36.4
Total	15,143	8,776	1,724	8.8	13.9
Total	290,790	177,307	55,501	5.2	8.4

When we add in underemployed persons with unemployed persons, the labor surplus situation looks even worse for many blue collar and service occupations (Column E of Table 13). Health care occupations and higher skilled life, physical, and social scientist occupations were characterized by relatively low unemployed/job vacancy ratios while production and construction/extraction occupations had a very high number of unemployed and underemployed workers per available job opening. The unemployed/underemployed job vacancy ratios ranged

from lows of 1.5 to 1 in the health care practitioner and technical, and life, physical, and social scientist occupations to 2.3 to 1 in health care support to highs of 36 to 1 in production and 86 to 1 in construction/ extraction occupations (Chart 9). The transportation/ material moving and buildings and grounds cleaning and maintenance occupations also had high unemployed/underemployed to job vacancy ratios, at 14 to 1 and 29 to 1, respectively (Chart 9).

Chart 9:
Occupational Groups in Massachusetts With the Lowest and Highest Ratios of Unemployed and Underemployed Persons Per Job Opening in 2009 (Annual Averages)



The steep increases in the unemployed to job vacancy ratios in our state and the nation is due to both a sharp increase in the number of unemployed persons and a substantial decline in job postings from firms in the state. However, there are some occupations in which employers appear to have unfilled openings that exceed the supply of workers with the necessary skills/experience required for these occupations. The Massachusetts Job Vacancy survey provides job vacancy estimates and rates for several individual occupations that comprise a large share of the total number of vacancies in the state. In Table 14, the occupations with vacancy rates above 3.0% during the 4th quarter of 2009 are displayed along with their accompanying unemployment estimates from the CPS survey. The occupations with the highest vacancy rates

were medical and public health social workers (8.0%), retail salespersons (6.6%), and medical and health services managers (6.6%). The high vacancy rate for retail sales persons may likely be due to hiring during the holiday season at the end of 2009. Many of these jobs were also part-time and temporary. There also were 862 vacancies for sales and marketing managers representing a relatively high vacancy rate of 5.2%.

For some of these jobs, unemployment estimates were not available due to definitional problems that prevented us from matching the occupations on the state's job vacancy survey with the CPS occupations of the unemployed or because unemployed persons in several of these occupations were not found in the survey. For example, we could not match the medical and public health social work occupations exactly with an occupational classification from the CPS survey, so the unemployed column is labeled not applicable (NA). In the case of physical therapists, we could not find an unemployed physical therapist in the state during 2009 in the CPS survey. We filled this cell with NA, but it is likely in shortage. Several of the occupations on this list did have an excess of unemployed persons to vacancies with the major exception being registered nurses where the ratio of unemployed persons to vacancies was only .18 to 1. Further research on the actual job market situation for those occupations that appear to be in shortage seems warranted.

Table 14:
Occupations With Job Vacancy Rates Above 3.0% During the 4th Quarter of 2009 in
Massachusetts

Occupational Title	Job Vacancies 4 th Quarter 2009	Job Vacancy Rate 4 th Quarter 2009	Unemployed (2009 Annual Average)
Medical and Public Health Social Work	476	8.0	NA
Retail Salespersons	7268	6.6	6,379
Medical and Health Services Managers	553	6.6	NA
Medical Scientists (Exc. Epidemiologist)	457	5.8	867
Physical Therapist	366	5.8	NA
Marketing and Sales Managers	862	5.2	1,018
Hosts and Hostesses, Restaurant	386	4.8	569
Tellers	687	4.7	445
Combined Home Health Aides and Nursing Aides, Orderlies & Attendants	2429	4.1	3469*
First-Line Sup/Mgr. of Retail Sales	1074	4.0	3,592
Registered Nurses	2769	3.5	521

* The CPS does not provide separate unemployment estimates for home health aides and nursing aides, orderlies, and attendants. We had to combine the findings for these two groups.

The Changing Distribution of Job Openings by Educational Requirements

The composition of job openings by major occupational group has changed over the past year with a relatively greater decline in more highly skilled and full-time openings that were more likely to require academic degrees from applicants. The Massachusetts job vacancy survey has collected data from employers on the educational requirements for their available job openings. The Massachusetts Department of Workforce Development has categorized findings on the educational requirements of jobs into three groups: no formal educational requirement, high school or vocational education, and an Associate's degree or higher. Findings on the educational requirements of job vacancies in the fourth quarters of 2007, 2008, and 2009 are displayed in Table 15.

Table 15:
Percent Distribution of Job Vacancies in Massachusetts by
Their Educational Requirements From 2007 IV to 2009 IV

	(A)	(B)	(C)	(D)
Educational Requirements	2007 IV	2008 IV	2009 IV	Percentage Point Change, 2007 – 2009
No formal educational requirements	15	13	33	+18
High school or vocational education	39	40	29	-10
Associate’s degree or higher	46	47	38	-8

At the peak period for job vacancies in the fourth quarter of 2007, slightly under one half (46%) of all job vacancies in Massachusetts required an Associate’s or higher degree from job seekers. While total job vacancies declined sharply in 2008, the educational mix of job openings stayed pretty much the same, with 47 percent of the vacancies in the fourth quarter of 2008 requiring an Associate’s degree or higher. Over the following year, there was a shift in the occupational mix of job openings with an increase in part-time vacancies in many service, office, and lower level sales positions that had lower educational requirements. By the fourth quarter of 2009, the share of all job vacancies with no formal educational requirements had increased to 33% while the share of vacancies with some formal college degree requirement had declined from 46 to 38 percent.

Summary of Key Findings and Their Implications for the Workforce Development System in Massachusetts

This research report was designed to provide a careful review and assessment of key labor market developments in Massachusetts over the past few years through 2009. Our analysis revealed a substantial weakening of labor market conditions in the state from the early spring of 2008 through the end of calendar year 2009. First, the aggregate number of job vacancies in the state declined substantially in 2008 and during the first half of 2009 before modestly improving in the fourth quarter of that year. Total job vacancies in the state in the fourth quarter of 2009 were about 38% below their level in the same quarter of 2007. Similar large drops in vacancies occurred across the nation. Second, the characteristics of the job vacancies also changed over

time. A rising share of available job openings were part-time rather than full-time and in 2009 had fewer formal educational requirements, especially Associate's or bachelor degrees, reflecting changes in their occupational composition.

Third, the total number of unemployed in the state together with the unemployment rate increased very steadily and strongly, more than doubling in size from the early spring of 2008 to the end of calendar year 2009. There were 320,000 unemployed persons 16 and older in the state in the final months of 2009. Fourth, the number of underemployed persons also rose very substantially over the past two years. The pool of underutilized labor in Massachusetts rose close to 600,000 in the fourth quarter of 2009. Fifth, as a consequence of the above developments, labor markets in Massachusetts became characterized by substantial labor surpluses through 2009. In the fourth quarter of 2009, there were five unemployed persons for every job vacancy, on average in 2009 there were nearly eight full-time unemployed workers for every full-time job vacancy, and there were 10 underutilized workers for every job vacancy. Nationally, there were 12 underutilized workers for every job vacancy in 2009. Finally, the degree of labor market imbalances in Massachusetts in 2009 varied quite widely across major industrial sectors and occupational groups. The highest degrees of labor surplus as measured by the ratio of the unemployed to job vacancies were in the construction (44-1) and manufacturing industries (19-1) with real estate and leasing also being in substantial surplus (12-1). Across major occupations, the highest surpluses were in construction and extraction occupations (53-1), production occupations (22-1), building and grounds cleaners (17-1), and transportation operatives and material moving occupations (9-1). Health care practitioners, including doctors/nurses/technicians, were one of the few occupational groups where vacancies exceeded the unemployed. Health care support occupations were characterized by a near balance between job vacancies and the unemployed (1.1 unemployed per vacancy); however, a very high share of job openings in this occupational area were part-time in nature. There are other individual high skilled occupations with high vacancy rates, including medical scientists, medical and public health social workers, marketing and sales managers, and physical therapists.

The existence of these large labor surpluses in our state in 2009 reduces our real output, employment, earnings, and income across the state and contributes to growing fiscal problems at the local, state, and national level. Jobless workers do not pay Social Security, federal income, or state income taxes, they pay far less in sales taxes, often do not directly pay property taxes, and

frequently require large transfer payments in the form of unemployment insurance benefits, disability payments, food stamps, rental assistance, and health care assistance to support themselves. The underemployed work far fewer hours per week than their full-time counterparts and earn less than half their mean weekly earnings. The future wage gains from part-time work also are considerably less than full-time work and recent research for younger adult women indicate that part-time work may have no positive effect on future wages.

There are a variety of economic development and workforce development strategies, including job creation, wage subsidies, training and retraining programs that can be pursued to help close the large gap between job availability and the underutilized labor force in our state. First, the remaining ARRA monies available in the state and other economic development/green technology investment monies from federal and state government, and utilities, should be redirected at projects that would boost employment both directly and indirectly through the multiplier effect, especially in the state's construction and manufacturing industries which are characterized by huge labor surpluses. The state's Department of Workforce Development has taken a few initial steps to monitor all jobs created by the ARRA stimulus and required that firms post all jobs for which new hires will take place on the Job Quest website. Relatively few ARRA-funded jobs have appeared on this site, in recent months. The state needs to undertake steps to enforce compliance with the Governor's administrative rules on listing jobs. The information base should track the industries and occupations of all jobs created and the characteristics of the individuals receiving them. There is an overwhelming need for more targeting of ARRA funds on projects employing young adults, the non-college educated, and blue collar workers and for greater transparency in the reporting process. The current reporting system does not meet any of these informational needs. Data are too highly aggregate and characteristics of jobs cannot be identified.

Second, the state should seek funding for job creation activities under the TANF Emergency Grants provided to states by the U.S. Congress. States were allowed to use part of these monies for job creation for adults and youth who could meet specific income guidelines established by the state. Massachusetts did not apply for these monies last year, choosing other uses of the funds. The state should apply for such monies with available grants and possible forthcoming additions to the fund by the U.S. Congress. Adult public assistance recipients (18-64

years old), teens and young adults, and other low income adults should be the key target groups for these job creation services.

Third, the state's Congressional representatives, including Senators Kerry and Brown, should provide active support for the funding of summer and year-round job creation programs for teens and young adults (20-24) under the Workforce Investment Act. In both our state and the nation, teen employment rates last year were at post World War II lows and low income youth (family income under \$20,000) in our state were characterized by the lowest employment rates. The state legislature should enact the proposed Youth Workforce Solutions Act that would expand funding to support youth jobs through such programs as Connecting Activities and Youth Works, especially year-round efforts, and educational services for out-of-school youth and high school students at-risk of dropping out.

Fourth, additional monies should be made available by the federal government to state and local WIA service delivery agents to recruit and retrain displaced workers, especially blue collar workers, including on-the-job training subsidies to encourage firms to hire and train such displaced workers. On-the-job training has seldom been used as a strategy by state and local WIA agencies to help re-employed dislocated workers even though past national evidence on such programs for adult disadvantaged and unemployed workers showed it was often effective.

Fifth, the Workforce Training Fund (WTF) and the Workforce Competitiveness Training Programs should be more heavily targeted on both existing employed blue collar workers and on encouraging firms to hire additional workers (backfill slots) in response to the training monies they receive from the state. Training programs need to be redesigned to support employment expansion efforts. There is a clear, immediate need to improve the existing WTF database on who gets trained, including their demographic and occupational backgrounds, what services they receive, and what promotions/wage increases workers obtain after completing such training. Similar remarks apply to the Workforce Competitiveness Training programs. Better data on services, outcomes, and impacts on workers and firms is needed to guide future workforce development policy in this area.

Finally, the operations of the state's job bank system (Job Quest) and the WIA One Stop Career Centers need to be more carefully evaluated. How successful is the Job Quest system in capturing available job vacancies around the state? How can the staff of the One Stop Centers,

especially the Business Service Representatives, be used to improve the penetration rate of Job Quest? Which specific services provided by one stop centers (workshops, self-guided job search, job development, job referrals, marketing of new hire tax credits) are the most effective in improving re-employment rates and the earnings of jobseekers? There is a clear need for more careful experimentation in this area to test the effectiveness of alternative service strategies. Our current knowledge base is highly deficient.