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Massachusetts Labor Markets in Mid-2005: An Assessment of Job Vacancy and Unemployment Developments 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 both timely and statistically reliable information on labor market developments. Knowledge of trends in employment growth and decline by industry and occupational area, available job vacancies by industry and occupation and their geographic locations across the state, and the size and character of unemployment, underemployment, and other labor underutilization problems is indispensable to the planning and design of job training programs, job development and placement programs, and career guidance and counseling for jobseekers.¹ More efficient matching of available job seekers with job openings can improve the efficiency with which local labor markets operate, thereby reducing both vacancy and unemployment rates and expanding employment and output.

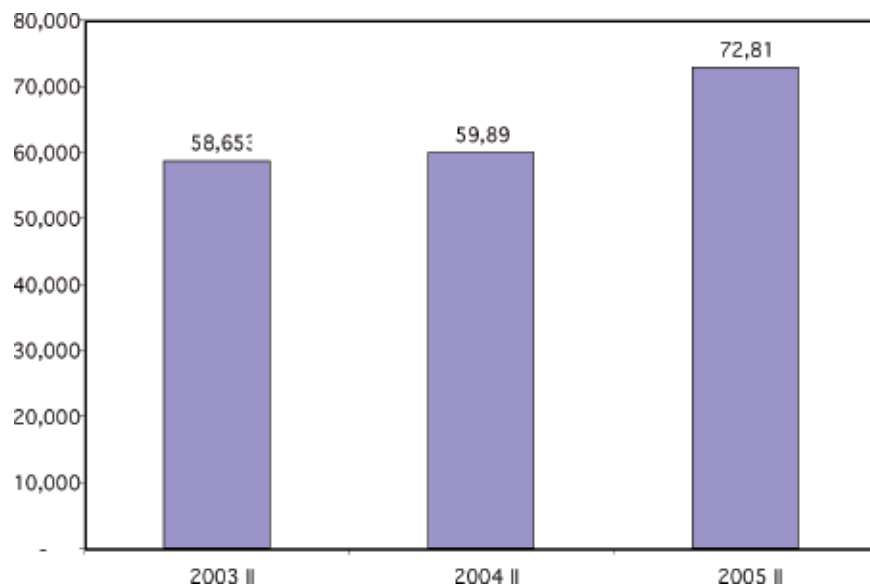
In recent years, the Massachusetts Department of Workforce Development through the Division of Unemployment Assistance has undertaken a comprehensive, semi-annual job vacancy survey across the state.² The job vacancy survey collects information from both private sector employers and government agencies on current job openings in their firms for which active efforts are being made to recruit applicants from outside the firm. Data are collected on the occupational characteristics of these vacancies, the industries of the firms in which they are located, their wage rates, employee benefits, and hiring requirements. The findings of the sample survey have been used to produce estimates of the aggregate number and rate of job openings across the state, major industries, occupations, and geographic areas.³ In this paper, we also compare the number of job vacancies in the aggregate and across major industries with the number of unemployed residents in the state to identify the comparative degree of labor surpluses and/or shortages across the state and individual industrial sectors. At several points in this paper, we will compare estimates of job vacancy rates and unemployment/job vacancy ratios for Massachusetts with those for the entire nation. Since December of 2000, the U.S. Department of Labor's Bureau of Labor Statistics (BLS) has been conducting its own survey of labor turnover, hiring, and job openings for the nation as a whole and for the four geographic regions (Northeast, Midwest, South, West).⁴

The final section of the paper will present findings on the combined pool of labor underutilization problems, going beyond the official unemployment statistics, in the state in calendar year 2005 and assess the implications of these findings for future workforce development and economic development policymaking in the Commonwealth. The state's very weak job generating performance since 2000 calls for a major strengthening of economic development efforts, and there is a clear need to improve ties between the state's economic development and workforce development systems.

Recent Trends in the Number and Rate of Job Openings in Massachusetts

The job vacancy survey of the Massachusetts Department of Workforce Development provides estimates of the aggregate number of job openings in both the private and public sectors of the state economy.⁵ Estimates of the aggregate number of job openings in the second quarters of calendar years 2003, 2004 and 2005 are displayed in Chart 1. The total number of job vacancies in the state increased only modestly between 2003 and 2004 but then rose strongly between the second quarters of 2004 and 2005, increasing from slightly under 60,000 to nearly 73,000 over the latter time period. Payroll employment in the state during the second quarter of 2004 (seasonally adjusted) was still some 7,000 below its level in the prior year. By the second quarter of 2005, payroll employment in Massachusetts had increased by 21,000 over its previous year level and the unemployment rate was declining from 5.2% to 4.7% over this 12 month period. A combination of rising demand for labor and declining unemployment helped push up the number of job vacancies in the state's labor markets.

Chart 1: Trends in the Total Number of Job Vacancies in Massachusetts During 2003 II, 2004 II, and 2005 II



*Estimate includes an imputed number of job openings in the public sector during this time period.

The job vacancy rate in the state also rose over the 2003 to 2005 period as the growth rate in the number of job vacancies outpaced the growth rate in payroll employment. The job vacancy rate as measured by the Massachusetts Department of Workforce Development represents the value of the ratio of the number of job vacancies (V) to the total number of employed (E) as measured by the monthly payroll survey. The job vacancy rate in Massachusetts was essentially unchanged between the second quarters of 2003 and 2004 at 2.0%. Over the following twelve months, however, the job vacancy rate is estimated to have increased to 2.6% as the increase in the number of job openings grew more rapidly than payroll employment.

The job vacancy data for the state have been broken out into seven geographic regions representing the boundaries of economic development districts across the state. Estimates of the number and rate of job vacancies in these seven economic development district are displayed in Table 1. During the second quarter of 2004, job vacancy rates varied from a low of 1.8% in the Southeast region to a high of 3.1% in the Berkshires. Over the following year, job vacancy rates rose in each of these seven geographic regions, with the absolute size of the increases in these vacancy rates ranging from .4 percentage points to .9 percentage points in the Southeast. During the second quarter of 2005, job vacancy rates in the state ranged from 2.4% in the Central, Northeast, and Pioneer Valley regions to a high of 3.7% in the Berkshires. In the Berkshires, there was 1.43 unemployed workers per vacancy in the second quarter of 2005, one of the lowest ratios in the state.

Table 1: Number and Rate of Job Vacancies by Geographic Region, 2nd Quarter 2004 and 2nd Quarter 2005

Region	2nd Quarter 2004		2nd Quarter 2005		Change in Job Vacancy Rate, 2004 II – 2005 II (in Percentage Points)
	# of Job Vacancies	Job Vacancy Rate	# Job Vacancies	Job Vacancy Rate	
Massachusetts	59,891	2.0%	72,813	2.6%	+ .6
Berkshire	1,819	3.1%	2,048	3.7%	+ .6
Cape & Islands	3,523	2.9%	3,448	3.3%	+ .4
Central	4,959	2.0%	5,720	2.4%	+ .4
Greater Boston	29,908	2.0%	36,408	2.5%	+ .4
Northeast	7,740	1.9%	9,206	2.4%	+ .5
Pioneer Valley	5,316	2.0%	6,396	2.4%	+ .5
Southeast	6,626	1.8%	9,587	2.7%	+ .9

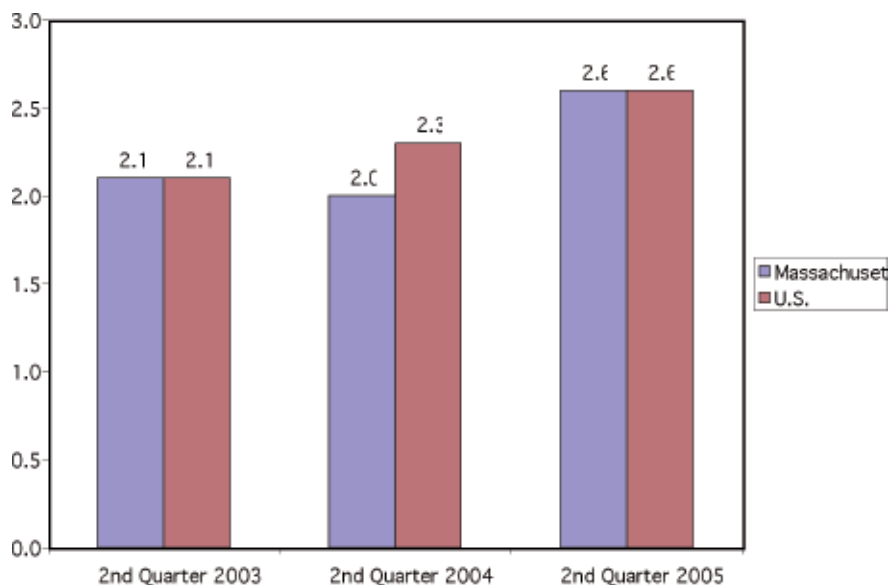
Comparisons of Job Vacancy Rates in Massachusetts and the U.S.

The U.S. Bureau of Labor Statistics has been conducting a monthly job vacancy survey since December of 2000. The national job vacancy rate is quite cyclically sensitive. It fell sharply during the recessionary year of 2001 (declining from 3.3% in January of 2001 to 2.3% by the fall), declined slightly during 2002, and did not begin to rise steadily until the payroll jobs recovery began to gather steam in early 2004.⁶

Comparisons of national job vacancy rates with those of Massachusetts for the second quarters of 2003 through 2005 are displayed in Chart 3. During the second quarter of 2003, the national and state job vacancy rates were identical at 2.1%. In the second quarter of 2004, the national job vacancy rate was slightly above that for the state (2.3% vs. 2.0%), but by the second quarter of 2005 the vacancy rate of the state had climbed back to equality with the nation at 2.6% despite far less solid job growth in the state over this time period. Nationally, the job vacancy rate continued to rise throughout the year, increasing to 2.9% in the fourth

quarter of 2005. Findings for the 2005 IV vacancy rate for the state will not be available until later in the spring of 2006.

Chart 3: Trends in Job Vacancy Rates in Massachusetts and the U.S., 2nd Quarter 2003 to 2nd Quarter 2005 (in %)



Trends in the Ratios of Job Vacancies to the Unemployed in the State and the Nation

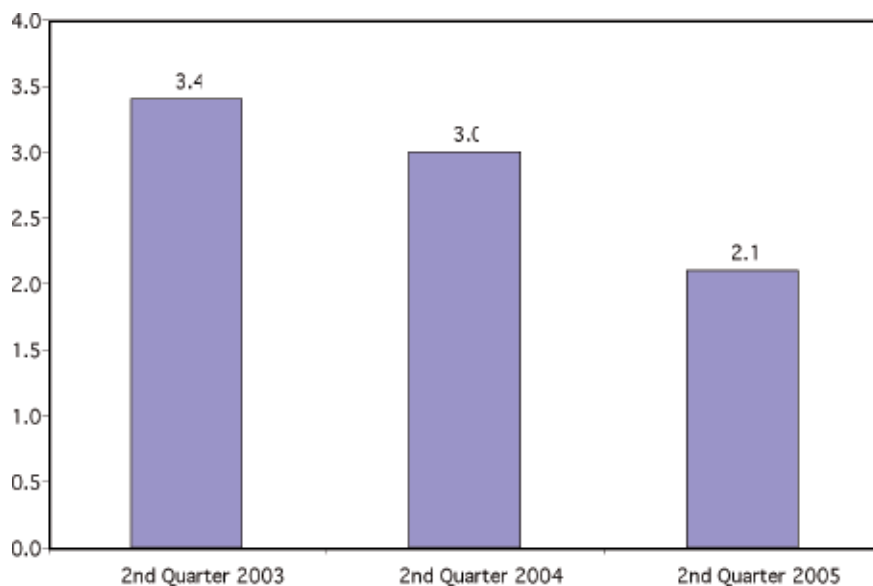
Labor market and macroeconomic analysts have analyzed the statistical relationship between the number of unemployed and the number of job vacancies.⁷ The two variables are statistically portrayed as being inversely related to one another, i.e., the number of vacancies tends to rise as the pool of unemployed declines in a non-linear manner.⁸ We have combined the job vacancy estimates with estimates of the number of unemployed persons in Massachusetts from the LAUS survey over the past five vacancy surveys to determine the ratio of the unemployed to the number of job vacancies. This ratio provides a rough proxy of the overall state of labor demand during a given term period. In his classic book *Full Employment in a Free Society*, William Beveridge, a British economist, argued that “full employment” implied an existence of somewhat more vacancies than unemployed people. In Massachusetts, labor markets clearly appear to have been in substantial surplus in 2002 and 2003 with the number of unemployed exceeding the number of job vacancies by ratios of three or more to one (Table 2 and Chart 4). The imbalance between the unemployed and the number of vacancies has declined in the past year, with the ratio of unemployed to job vacancies across the state falling to two to one in the second quarter of 2005.

Table 2: Estimates of the Number of Unemployed Persons and Job Vacancies and Estimated Ratios of the Number of Unemployed to Job Vacancies in Massachusetts, From the 4th Quarter of 2002 to the 2nd Quarter of 2005 (Not Seasonally Adjusted)

Time Period	Unemployed persons	Estimated Vacancies	Unemployed/Vacancies
4th Q 2002*	176,866	49,004	3.6
2nd Q 2003*	199,000	58,654	3.4
4th Q 2003	180,733	64,926	2.8
2nd Q 2004	176,967	59,891	3.0
4th Q 2004	143,800	71,934	2.0
2nd Q 2005	155,238	72,813	2.1

Note: *The estimates of vacancies for the fourth quarter of 2002 and the second quarter of 2003 include a proxy estimate for job vacancies in the public sector, based on 7% of all job vacancies in the state.

Chart 4: Trends in the Unemployment to Job Vacancy Ratios in Massachusetts, 2nd Quarter 2003–2nd Quarter 2005



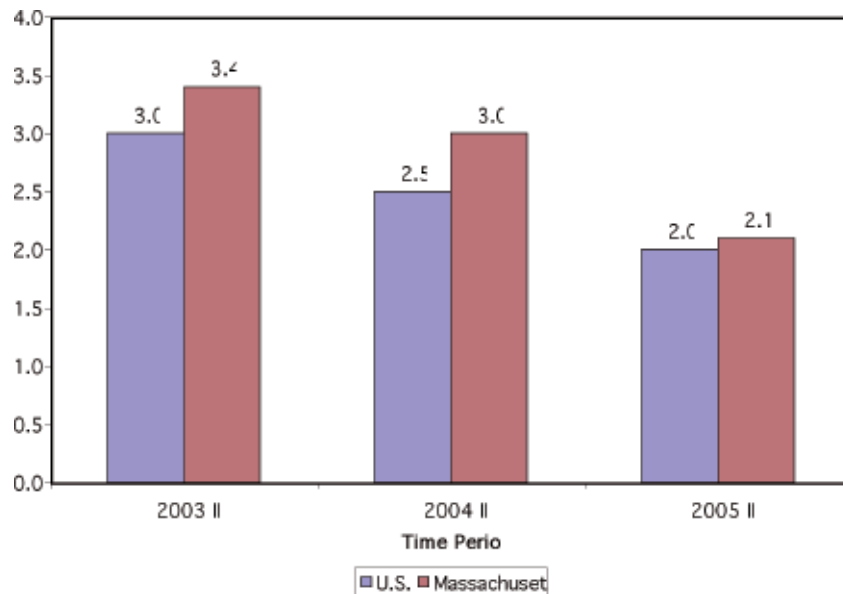
Estimates of the ratios of the unemployed to job vacancies in the U.S. for selected time periods over the past five years are displayed in Table 3 and Chart 5. At the height of the national labor market boom in December 2000, there were 1.43 unemployed persons for every available job opening. Over the next 18 months which covered the recession of 2001 and the jobless recovery of 2002, the ratio of unemployed/vacancies rose sharply, increasing to 2.68 in the second quarter of 2002 and to 3.04 in the second quarter of 2003. Since then the U/V ratio in the U.S. has declined steadily as payroll employment levels rose strongly and unemployment levels declined. By the second quarter of 2005, there were only two unemployed persons for every job vacancy in the U.S.

Table 3: Numbers of Job Vacancies and Unemployed in the U.S., Selected Time Periods, 2002 – 2005 (Not Seasonally Adjusted)

Time Period	(A) Job Vacancies	(B) Unemployed	(C) Unemployed Per Vacancy
December 2000	3,962	5,692	1.43
2001 II	4,147	6,240	1.50
2002 II	3,108	8,327	2.68
2003 II	2,922	8,883	3.04
2004 II	3,301	8,082	2.45
2005 II	3,746	7,497	2.00

The ratios of the unemployed to the number of job vacancies in Massachusetts and the U.S. have followed a similar downward trend since 2003 (Chart 5). In the second quarter of 2003, there were more than three unemployed persons per job vacancy in Massachusetts, and a similar 3 to 1 ratio prevailed in the nation at that time. By the second quarter of 2005, both areas were characterized by a two to one ratio of unemployed per job vacancy. The comparative degree of labor surplus clearly declined in the state and the nation over the past two years. What developments in Massachusetts labor markets led to this improvement in the relative number of job vacancies over the past two years?

Chart 5: Comparison of the Ratios of the Unemployed to Job Vacancies in the U.S. and Massachusetts, Selected Time Periods, 2003 II to 2005 II



Sources of the Decline in State Unemployment Over the Past Two Years

The steep decline in the pool of unemployed persons in the Commonwealth between the second quarters of 2003 and 2005 was primarily attributable to an estimated decline in the number of residents who were active in the labor force rather than to any major increase in the number of employed persons (Table 4). The seasonally adjusted LAUS employment estimates for these two time periods indicate that the total number of employed residents was basically unchanged between the second quarter of 2003 and the second quarter of 2005. The drop of 1,800 is not statistically different from zero. Payroll employment in the state as measured by the monthly Current Employment Statistics survey was up by around 14,000 over this two year period.⁹ The steep drop in unemployment, thus, came from a reduced number of residents in the labor force. The resident labor force is estimated to have fallen by 43,000 or 1.3% over this period (Table 4). Massachusetts is one of only two states whose labor forces were estimated to have declined between 2002 and 2005. In fact, the annual average size of the state's resident labor force in 2005 was 52,000 below its peak of 3.428 million in calendar year 2002 (Table 5).

Table 4: Sources of Change in the Number of Unemployed Persons in Massachusetts, 2003 II to 2005 II (Seasonally Adjusted, in 1000s)

Time Period	(A) Unemployed	(B) Employed	(C) Resident Labor Force
2003 II	200.5	3215.8	3416.3
2005 II	158.9	3214.0	3372.9
Absolute Change	-41.6	-1.8	-43.4

Table 5: Trends in the Size of the Resident Civilian Labor Force of Massachusetts from 2000 to 2005 (Annual Averages)

Year	Civilian Labor Force
2000	3,366,600
2001	3,400,600
2002	3,427,900
2003	3,413,800
2004	3,393,100
2005	3,375,700
Change, 2000-2005	+9,100
Change, 2002-2005	-52,200

Source: Massachusetts Division of Unemployment Assistance, web site.

The decline in the state's resident labor force over the past few years should be viewed as troublesome by state economic and workforce development policymakers. A declining labor force will restrict the capacity of the state to generate additional jobs and real output in the future and, if left unchecked, will contribute to rising labor shortages. The increase in the number of job vacancies over the past few years was partly due to the inadequate labor supply available to employers. The surprising drop in the labor force since 2002 seems to have been influenced by rising levels of domestic out-migration and to a fall in the state's labor force participation rate.

During 2001, net domestic migration was estimated by the U.S. Census Bureau at -23,000, but it deteriorated to -40,000 in 2002 and to -60,000 in 2004 and 2005.¹⁰ A very high fraction of these out-migrants were of working-age (16-54), and many of them were attached to the labor force in the states to which they had migrated.¹¹ The labor force participation rate of the state based on the LAUS estimates dropped from 68.4% in 2002 to 66.9% in 2005, a decline of 1.5 percentage points. Knowledge of the sources of this drop in the participation rate would be helpful for workforce development program planning. Which demographic and socioeconomic groups of the state's working-age population have reduced their attachment to the labor force in recent years? How can they be brought back into the labor market?

Job Vacancy Rates Across Major Industries of Massachusetts in 2005 II

The Massachusetts job vacancy survey also provide estimates of the number and rate of job vacancies in major industrial sectors of the state. Findings for the second quarters of 2003 and 2005 are presented in Table 6. While the overall job vacancy rate rose from 2.1 to 2.6 percent over this two year period, the changes in job vacancy rates across industrial sectors varied considerably. While vacancy rates rose sharply in information, professional and technical services, and administrative and support industries, they actually declined by one or more percentage points in transportation/warehousing, other services, and real estate and were flat in the construction/utilities sector.

Job vacancy rates in the second quarter of 2005 also varied quite considerably across industrial sectors (Table 6). The vacancy rates were lowest in public administration (1.1 percent), real estate (1.3%), and manufacturing and transportation/warehousing (1.7%). Job vacancy rates were highest in accommodation and food service (3.5 percent), administrative and support services (3.6 percent) and healthcare industries (3.8 percent). The relative size of the gap between the vacancy rates of the industries with the highest and lowest rates was 3.5 times.

Table 6: Changes in Job Vacancy Rates by Major Industries in Massachusetts, 2nd Quarter 2003 to 2nd Quarter 2005 (in %)

Industry	2003 2nd Quarter	2005 2nd Quarter	Percentage Point Change
Total, All Industries	2.1	2.6	0.5
Information	1.3	3.0	1.7
Professional Technical Services	1.7	3.2	1.5
Administrative & Support and waste management	2.3	3.6	1.3
Finance and Insurance	1.3	2.5	1.2
Wholesale Trade	0.7	1.7	1.0
Management	1.3	2.3	1.0
Accommodation and Food Service	2.8	3.5	0.7
Healthcare	3.1	3.8	0.7
Educational Services	1.2	1.8	0.6
Manufacturing	1.1	1.7	0.6
Retail Trade	2.1	2.5	0.4
Arts and Entertainment	2.7	3.1	0.4
Construction, utilities, mining	2.1	1.7	-0.4
Transportation and Warehousing	2.7	1.7	-1.0
Other Services	3.4	2.0	-1.4
Real Estate	3.2	1.3	-1.9
Agriculture	4.4	2.0	-2.4
Public Administration	n.a.	1.1	—

Note: Job vacancy data were not available for the government in the second quarter of 2003.

Unemployment data by industry from the Current Population Surveys (CPS) for the first six months of 2005 were used together with job vacancy data by industry for the second quarter of 2005 to calculate U/V ratios for each industry.¹² For the labor market as a whole, there were 2.3 unemployed for every job vacancy (Table 7). The ratios of the unemployed to job vacancies ranged widely across major industrial sectors of the state. In the health care sector, there were many more job vacancies than unemployed people (16,200 vs. 10,500). In the public administration and finance and insurance industries there was a rough balance between the number of unemployed and the count of job vacancies, however, in manufacturing, transportation/ warehousing, and construction industries, the number of unemployed substantially exceeded the number of job openings by ratios of four to nine times. Within these industries, there were a few occupations where a sizable number of vacancies existed, but across all occupations in these sectors there was a substantial excess of unemployed workers.

Table 7: Unemployment to Vacancy Ratios by Major Industries in Massachusetts, 2nd Quarter 2005

Industry	(A) Average Unemployment of First 6 Months of 2005	(B) Vacancies 2nd Quarter 2005	(C) U/V Ratio
Total	165,610	72,813	2.3
Construction	27,718	2,948	9.4
Transportation and warehousing	9,309	1,620	5.7
Administrative and support services	15,958	3,686	4.3
Other services	6,738	1,610	4.2
Manufacturing	20,063	5,270	3.8
Wholesale trade	5,373	1,918	2.8
Retail trade	18,109	8,251	2.2
Educational services	11,064	5,471	2.0
Arts, entertainment, and recreation	3,088	1,576	2.0
Professional and technical services	11,662	6,160	1.9
Information	4,368	2,620	1.7
Accommodation and Food Services	13,160	8,164	1.6
Real Estate	615	473	1.3
Public administration	1,463	1,183	1.2
Finance & Insurance	4,832	4,001	1.2
Agriculture	1,615	128	12.6
Healthcare	10,473	16,203	0.6

Data Sources: (i) CPS Household Survey, first 6 months, 2005 averages;
(ii) Massachusetts Job Vacancy Survey, 2nd quarter 2005.

Job Vacancies and the Unemployed by Major Occupational Group in Massachusetts, 2005 II

The job vacancy survey in Massachusetts also collects information on the occupations of jobs in which vacancies exist.¹³ The 72,813 estimated job vacancies in Massachusetts at the time of the 2005 II job vacancy survey were categorized into 22 major occupational groups by the Division of Unemployment Assistance. Job vacancy rates in these 22 occupational groups ranged from lows of 1.2% in legal occupations and 1.4% for blue collar production occupations to highs of 3.5 to 4.8 percent for community and social service workers, life/physical/and social science occupations, and 4.5 percent for healthcare practitioner and technical occupations. Registered nurses and licensed practical nurses accounted for a high share of the job openings in the healthcare practitioner category.¹⁴

The estimates of job vacancies by major occupational category were combined with data on the unemployed by major occupational group during the first six months of calendar year 2005 to estimate the ratios of the unemployed per job vacancy in these occupational groups. The CPS monthly surveys for the January – June period of 2005 were used to generate these estimates of the unemployed by major occupational group. There were several occupational groups, including community and social service workers, in which there were no estimated unemployed persons in the state.¹⁵ For these groups, the U/V ratio was zero.

The ratios of the unemployed to job vacancies varied quite considerably across the 22 major occupational groups during the second quarter of 2005 (Table 8). These ratios ranged from lows of .00 to .97 in seven major occupational groups to highs of 10 or more in three occupational groups. Of the seven occupational groups with more vacancies than unemployed persons, two were in the health-related field, including health care support (nurse aides/orderlies) as well as health care professionals and technicians, two were in the professional occupations (including computer scientists and engineers), and one was in a blue collar craft occupational field. The installation maintenance, and repair occupations, include automotive technicians and auto body repair positions, that have been cited as being in shortage in our state in recent years. At the time of the 2005 II survey, there were slightly over 400 job openings for workers in such occupations. The number of occupations in which available job vacancies equal or exceed the number of unemployed has been rising in our state in recent years. These occupations are quite diverse in terms of their skill composition and their education/training requirements and will require a diverse array of strategies to alleviate current and future shortages.

Table 8: Unemployment to Vacancy Ratios by Major Occupational Group in Massachusetts, 2nd Quarter 2005

Occupational Group	(A) Average Unemployment of First 6 Months of 2005)	(B) Vacancies 2nd Quarter 2005	(C) U/V Ratio
Total	165,610	72,813	2.27
Farming, fishing, and forestry occupations	1,615	128	12.62
Construction and extraction occupations	25,907	2,353	11.01
Building & grounds cleaning and maintenance occupations	17,085	1,624	10.52
Legal occupations	1,639	298	5.50
Arts, design, entertainment, sports, and media occupations	2,904	686	4.23
Transportation and material moving occupations	15,268	3,621	4.22
Production occupations	10,824	2,655	4.08
Office and administrative support occupations	26,121	8,260	3.16
Life, physical, and social science occupations	3,747	1,647	2.28
Management occupations	9,858	4,758	2.07
Sales and related occupations	14,650	8,419	1.74
Personal care and service occupations	4,153	2,417	1.72
Business and financial operations occupations	5,368	3,371	1.59
Food preparation and serving related occupations	10,489	6,878	1.52
Education, training, and library occupations	4,216	3,527	1.20
Protective service occupations	1,721	1,781	0.97
Installation, maintenance, and repair occupations	1,133	1,351	0.84
Architecture and engineering occupations	1,392	2,096	0.66
Computer and mathematical science occupations	1,936	3,056	0.63
Healthcare practitioner and technical occupations	4,344	8,862	0.49
Healthcare support occupations	1,239	3,065	0.40
Community and social service occupations	0	1,961	0.00

Data Sources: CPS Household Survey, first 6 months 2005 averages; Massachusetts Job Vacancy Survey, 2nd quarter 2005.

Continued Labor Force Underutilization Problems in Massachusetts in 2005

While state labor markets have shown some improvements over the past two years as measured by payroll employment growth, the decline in official unemployment, and the rise in the number of job vacancies, there are a number of important labor market challenges still facing the state. On the one hand, payroll job growth came to a rather abrupt halt in mid-2005, peaking at 3.212 million wage and salary jobs in the July-August period of 2005. Since then, payroll employment levels (seasonally adjusted) have declined, falling to 3.201 million in November-December, the average level of employment prevailing in the spring of that year. Nationally, payroll employment has continued to grow steadily over the past year. Our state captured a very low share (less than 1%) of net national job growth between December 2004 and December 2005.

While the total number of unemployed persons in the state has continued to decline and the unemployment rate fell to 4.8% in 2005, there are other substantial pools of unutilized 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 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. During 2005, there were approximately 78,000 individuals in the labor force reserve in our state (Table 9). Nationally, a high share of the members of the labor force reserve are teens and young adults without college degrees. The underemployed are those individuals who are working part-time but desire 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 receive lower future returns from their part-time work experience. During 2005, there were nearly 87,000 persons who were underemployed in our state. Combining the unemployed, underemployed, and the labor force reserve yields an annual average, underutilized labor pool of 334,000 persons in our state, excluding the mal-employed and the working poor. This pool of underutilized labor was actually 7,000 higher than it was in the preceding calendar year.¹⁶ The number of underutilized, working-age adults in Massachusetts during 2005 was equivalent to 9.7% of the state's adjusted labor force. Clearly, there is a major challenge for the workforce development system to match these unutilized and underutilized adults with available job openings, however, the state also needs a major increase in the number of wage and salary jobs to absorb this much larger pool of underutilized labor that excludes the mal-employed and those working full-time but unable to achieve an adequate annual earnings. There also is an immediate need for economic development and workforce development programs to work more closely together to improve the efficiency of both systems, creating new jobs that can be filled by current state residents.

Table 9: Number of Working-Age Residents of Massachusetts Who Were Unemployed, A Member of the Labor Force Reserve, or Underemployed in 2005 (Annual Averages in 1000s)

Labor Market Problem Group	Number (in 1000s)
Unemployed	169,324
Labor Force Reserve	78,010
Underemployed	86,715
Above Three Groups	334,049

Source: 2005 monthly CPS public use files, tabulations by authors.

Notes

- ¹ For an earlier review of employment and job vacancy developments in Massachusetts both in the aggregate and by major industry and geographic region of the state, See: Andrew Sum, Paulo Tobar, Joseph McLaughlin and Ishwar Khatiwada with Sheila Palma, Employment and Job Vacancy Developments Across Industries of Massachusetts and Local Workforce Development Areas/Economic Development Districts: Their Implications for Future Job Training and Workforce Development Initiatives, Workforce Solutions Group, Boston, Massachusetts, December 2005.
- ² See: Massachusetts Department of Workforce Development, Massachusetts Job Vacancy Survey: Hiring Trends by Industry and Occupation, 2nd Quarter 2005, Boston, January 2006.
- ³ Job vacancy data are provided for seven geographic regions representing economic development districts across the state. Several of these economic development districts cut across several different local labor areas.
- ⁴ See: 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.
- ⁵ For a review of the JOLTS survey of the U.S. Bureau of Labor Statistics, See: U.S. Department of Labor, Bureau of Labor Statistics, "New Monthly Job Data Series on Job Openings and Labor Turnover Announced by BLS," Washington, D.C., July 2002. The JOLTS survey provides estimates of job vacancies for major industries but not for occupations.
- ⁶ The national job vacancy rate fell from 2.3% at the beginning of 2002 to 2.1% by the end of the year. These monthly job vacancy rates for the nation are seasonally adjusted by BLS.
- ⁷ See: Kelly A. Clark and Rosemary Hyson, "New Tools for Labor Market Analysis: the JOLTS Survey," Monthly Labor Review, December 2001, p. 32-37.
- ⁸ The statistical relationship between the number of vacancies and the unemployed is typically portrayed in a Beveridge curve as a hyperbolic relationship in which $V * U = K$. The number of unemployed is inversely related to the pool of job vacancies. 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 The gap between these two employment change estimates needs to be more carefully investigated. More than sampling error seems to be involved. We have argued elsewhere that some part of this gap is due to individuals moving from independent contractor jobs and consultant positions to formal payroll jobs. This would boost the CES payroll employment levels but leave the LAUS employment estimates unchanged. There also is some evidence of an increase in in-commuting into the state from neighboring states and a modest rise in multiple jobholding among employed residents. Both developments would boost payroll employment levels but leave the LAUS resident employment totals unchanged. See: Andrew Sum and Paul Harrington, "Where Did the Workers Go? Off-Payroll and Under-the-Table Work Changes the Employment Equation," Commonwealth Magazine, Winter 2006, pp. 83-89.
- ¹⁰ Net domestic migration is the difference between arrivals into the state from other states and migrants from Massachusetts to other states during the year. A negative number implies that Massachusetts loses more residents to other states than it gains from those states.
- ¹¹ Estimates from the American Community Surveys for 2004 indicate that working-age out-migrants exceeded in-migrants by 60,000 in 2004. The ACS questionnaire asks respondents to identify their state of residence one year prior to the survey.
- ¹² Neither the unemployment data from the CPS nor the job vacancy data were seasonally adjusted. The CPS estimates of unemployment for the first six months of 2005 are somewhat above those from the LAUS survey.

- ¹³ A major shortcoming of the national job vacancy survey is that it fails to collect any information on the occupational characteristics of job vacancies. Only data on the industries of the firms in which job vacancies exist are collected by the national survey.
- ¹⁴ There were nearly 4,900 openings for registered nurses and 700 job openings for licensed practical nurses in the second quarter of 2005.
- ¹⁵ The CPI survey interviews approximately 1,700-1,800 labor force participants per month in Massachusetts. To increase the sample size of the unemployed, we used all 6 months of the CPS surveys for the January – June period of 2005.
- ¹⁶ For a review of the pool of unutilized labor in Massachusetts in 2004, See: Andrew Sum, Ishwar Khatiwada with Sheila Palma, Current Massachusetts Labor Market Challenges and the Workforce Solutions Act of 2005

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