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The Labor Force Behaviors, Employment and Earnings Experiences, and Labor Market Problems of the Disabled Working-Age Population in Massachusetts, New England, and the U.S. in 2003 and 2004

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Prepared for:

The Commonwealth Corporation
And
The Massachusetts Rehabilitation Commission

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Introduction

The planning and design of education, employment and training, health care, housing, income transfer, and support services programs for the disabled population in Massachusetts are dependent on the availability of timely and statistically reliable information on the size of the disabled population, their demographic and socioeconomic characteristics, the nature of their disabilities, their geographic locations across the state, their health status, and their labor market behaviors and problems. In a previous research report in this series, the findings of the American Community Surveys for calendar years 2003 and 2004 were used to produce a detailed profile of the size and demographic/ socioeconomic characteristics of the state's 16-74 year old disabled population.[1] Comparisons of the findings for Massachusetts were made with those for the New England region and the U.S. Projections were made of the future size of the 55-74 year old disabled population in the state, and the implications of these projections for the state's vocational rehabilitation and workforce development systems were briefly assessed.

Interest in the labor market behaviors, experiences, and problems of the disabled population in the nation has grown in recent years for several different reasons. First, there has been substantial growth in the number of adults receiving Social Security Disability Income (SSDI) and Supplemental Security Income (SSI) payments over the past two decades. The increase in the number of SSDI and SSI caseloads has a number of important budgetary consequences at the national and state level. Second, most national studies of the labor market behavior of the disabled have found evidence of declining employment rates over time, which has led to a number of new policy initiatives, including the national Ticket to Work Act, to boost the employability and earnings of the disabled.[2]

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[1] See: Andrew Sum, Ishwar Khatiwada, Paulo Tobar, with Sheila Palma and Joseph McLaughlin, The Adult Disabled Population (16-74) in Massachusetts: Its Size and Demographic/Socioeconomic Composition in 2003-2004, Prepared for the Commonwealth Corporation and the Massachusetts Rehabilitation Commission, Boston, March 2006.

[2] For a review of trends in the employment rates of the disabled in the nation and changes in public policy to promote the employment of the disabled, see:

(i) John Bound and Timothy Waidmann, "Accounting for Recent Declines in Employment Rates Among the Working-Aged Disabled," The Journal of Human Resources, Vol. 37, No. 2, 2002, pp. 231-250;

(ii) Richard V. Burkhauser and Mary C. Daly, "Policy Watch: U.S. Disability Policy in a Changing Environment," The Journal of Economic Perspectives, Volume 16 (1): 2002, pp. 213-224.

(iii) David C. Stapleton and Richard V. Burkhauser (Editors), The Decline of Employment of People With Disabilities: A Policy Puzzle, W.E. Upjohn Institute for Employment Research, Kalamazoo, 2003.

Third, in Massachusetts, there has been no growth in the state's resident labor force since 2000. In fact the state's labor force has declined nearly steadily since 2003. Massachusetts is the only state in the country to have experienced a labor force decline between 2002 and 2005. Fourth, the state's population and labor force are aging.[3] All of the net growth in the working-age population (16 and older) of the state over the next ten years will come from the aging baby boomers, the first members of whom became 55 years old in 2001. Disability rates rise with age especially after age 55, and the labor force attachment of the older members of the disabled population tends to be quite limited.[4] The success of efforts to boost the employability of the state's older population, including the disabled, will play a critical role in determining the future growth of the state's resident labor force. Given the importance of finding new sources of labor force growth and the projected strong increase in the disabled population of the state, knowledge of the labor market experiences and problems of the state's disabled population is indispensable. This research paper is designed to fill some of these important information gaps.

An Overview of the Study's Contents

The report will begin with a brief review of the data sources and the labor force, employment, and earnings concepts and measures underlying all of the estimates appearing in this paper. The key disability concepts underlying our estimates of the disabled population also will be presented. These discussions of data sources and labor force/employment concepts and measures will be followed by a comprehensive review of the labor force participation behavior, unemployment rates, and employment rates of the 16-74 year old disabled and non-disabled population in Massachusetts, New England, and the U.S. in calendar years 2003 and 2004. Estimates also will be presented for an array of gender, age, race-ethnic, educational attainment, and nativity subgroups to illustrate how these labor force participation, unemployment, and employment rates vary across key demographic and socioeconomic subgroups, especially educational attainment.[5] The descriptive analysis of the labor force participation and employment

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[3] See: Andrew Sum and Leonel Arana, The Graying of the Massachusetts Labor Force, Research and Evaluation Brief, Commonwealth Corporation, Boston, February 2006.

[4] The share of the state's population that was disabled in 2003-2004 rose from 11% among those 45-54 to 19% among those 55-64 to 28% among those 65-74. See: Andrew Sum, Ishwar Khatiwada, Paulo Tobar, et. al., The Adult Disabled Population (16-64) in Massachusetts …

[5] For earlier studies of the effects of schooling, literacy, and other human capital variables on the employment and earnings of the disabled across the U.S., see: Kevin Hollenbeck and Jean Kimmel, The Returns to Education and Basic Skills Training for Individuals with Poor Health and Disability, W.E. Upjohn Institute for Employment Research, Kalamazoo, August 2001.

rates of the disabled population in Massachusetts will be supplemented by a multivariate statistical analysis of the determinants of the employment status of the disabled, including human capital variables, demographic variables, family background variables, and non-wage income variables, including other family income and personal property and transfer incomes. This multivariate statistical analysis will then be followed by a simulation exercise in which we will estimate how many more of the disabled in Massachusetts would have been employed in 2004 if the state were able to match the performance of the top five states in the nation in employing the disabled.

Findings of the March CPS surveys for 2004 and 2005 will be used to identify labor market problems facing the disabled in Massachusetts and the U.S.[6] The CPS surveys collect information on the job desires of those persons not active in the labor force and the desired work hours of those persons working part-time, i.e., less than 35 hours per week. This information will be used together with unemployment data to estimate the pool of disabled adults who experienced one of the three labor market problems: open unemployment, a member of the labor force reserve (the hidden unemployed), and the underemployed.

The American Community Survey (ACS) also collected information on the employment experiences of working-age respondents (16 and older) in the twelve month period prior to the survey, their class of worker status, and the industries and occupations of the jobs they held at the time of the survey.[7] These data will be used to estimate the shares of the disabled population Massachusetts with some paid employment in the 12 month period prior to the 2003 and 2004 ACS surveys as well as the mean annual weeks and hours of employment of those who held at least one job in the prior twelve months. Findings on the employment experiences and job characteristics of the disabled in Massachusetts will be compared to those of their non-disabled peers in the state and the disabled in New England and the U.S. A separate appendix is devoted to a more detailed statistical portrait of the industries and occupations of the jobs held by the disabled in Massachusetts, New England, and the U.S. in the past few years.

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[6] The disability concepts in the Current Population Survey (CPS) and the American Community Survey (ACS) differ somewhat from one another, but appear to yield similar overall estimates of the disabled population in our state in recent years.

[7] The ACS survey asked each respondent to identify their class of worker status: private sector wage and salary, government wage and salary, self employed, or unpaid family worker. To be classified as an unpaid family worker, a person much have worked 15 or more hours in a family owned business without pay.

The next two sections of the paper will focus on the annual earnings of employed disabled workers in Massachusetts, New England, and the U.S. in 2002 and 2003. The mean annual earnings of disabled workers in Massachusetts in a variety of demographic, educational, and nativity subgroups will be reviewed and compared to those of both their non-disabled peers in the state and their disabled counterparts in New England and the U.S. The comparative rankings of the mean annual earnings of selected groups of disabled workers in Massachusetts among all 50 states and the District of Columbia will be presented in a separate appendix (Appendix D). To identify the factors influencing the annual earnings of disabled workers in Massachusetts, including their demographic and human capital traits and the industries and occupations of their jobs, we constructed and tested a number of multivariate statistical models, known in the labor economics literature as earnings functions. Findings of these earnings models will be reviewed and assessed. The final section of the paper will summarize key findings of the research and examine their implications for future workforce development policies for the disabled in the state.

Data Sources and Labor Force Concepts and Measures

Data on the labor force behavior and employment status of the disabled and non-disabled population in Massachusetts are available from several different national surveys, including the 2000 Census of Population and Housing, the American Community Surveys, and the monthly Current Population Surveys. During calendar years 2003 and 2004, the U.S. Census Bureau obtained completed ACS questionnaires from 569,000 to 572,000 households each year across the entire nation (Table 1).[8] In Massachusetts alone, just under 12,900 households were interviewed in 2003, and 12,742 households completed interviews in 2004. In the other five New England states, the number of interviewed households ranged from 4,300 to 5,500 with Maine having the lowest number of interviewed households in each year and Connecticut having the highest number after Massachusetts. For the region as a whole, we have ACS interview data for 36,000-37,000 households for each of the two years.

[8] The ACS surveys did not conduct interviews with persons living in group quarters, such as college dormitories, boarding schools, jails, prisons, or nursing homes. Only persons living in households were eligible for interviews.

Table 1:
Number of Households Interviewed During the 2003 and 2004 ACS Surveys in the U.S., Massachusetts, and Each of the Other New England States

Geographic Area	(A) 2003	(B) 2004
U.S.	572,447	568,966
New England	38,704	36,283
• Massachusetts	12,890	12,747
• Connecticut	5,573	5,543
• Maine	4,488	4,342
• New Hampshire	4,581	4,518
• Rhode Island	4,649	4,571
• Vermont	4,523	4,562

Source: U.S. Census Bureau, ACS web site.

Given methodological problems with the disability questions on the 2000 Census questionnaire, we primarily rely upon the American Community Surveys for our analysis of the labor market experiences and problems of the disabled population in Massachusetts, New England, and the U.S.[9] The American Community Survey, which is conducted annually by the U.S. Census Bureau, has been expanded substantially in size since 2002.

The ACS surveys collected information on the labor force activities of each household member 16 and older at the time of the survey. Each working-age respondent (16 and older) in a sample household was classified into one of the three following labor force categories based on his / her responses to the labor force activity questions: employed, unemployed, or not in the labor force. Those persons who met any of the following criteria were categorized as employed.

- Worked one hour or more for pay or profit in the prior calendar week. Persons doing only volunteer work outside the home are not included in the count of the employed.
- Had a job from which they were temporarily absent due to such reasons as vacation, illness, weather, or an industrial dispute at the work place.
- Worked without pay for 15 or more hours in a family owned business in the prior week.

[9] For a more detailed discussion of the disability measurement problems associated with the 2000 Census, See: Andrew Sum, Ishwar Khatiwada, Paulo Tobar, and Sheila Palma, The Adult Disabled Population (16-74), in Massachusetts…

To be classified as unemployed, the respondent had to meet all of the following criteria.

- No work for pay or profit in the reference week of the survey.
- Had actively looked for work in the past four weeks.[10]
- Was available to take a job during the reference week of the survey; i.e., the calendar week prior to the week for which the labor force questions were answered.

Those persons who were neither employed nor unemployed are classified as not in the labor force. The sum of the employed and the unemployed in Massachusetts represent the civilian labor force of the state. The ACS survey also collected information from respondents on their labor market activities in the 12 month period prior to the survey, including the number of weeks of paid employment, average hours worked per week, and annual earnings from wage and salary jobs and self-employment. We also will analyze a number of the findings on the work experiences and annual earnings of respondents in this research report.

There are a variety of labor force activity measures that can be constructed with the ACS labor force data. Five key labor force activity measures that will be used in the following few sections of this paper are the following:

- The civilian labor force participation rate. This measure represents the percent of the members in a given demographic group (e.g., disabled 16-24 year olds) who were classified as either employed or unemployed at the time of the ACS interviews.
- The unemployment rate. This measure represents the share of the members of the civilian labor force that were classified as unemployed. For example, suppose that there were 500 persons in a given group who were in the civilian labor force of whom 40 were unemployed. The unemployment rate for this group would be 40/500 or 8%.
- The employment/population ratio, which is frequently referred to in the labor economics literature as the E / P ratio. The E / P ratio represents the percent of the members in a given demographic group who are classified as employed. The value of the E / P ratio is determined by the group's labor force participation rate and its

[10] Passive job search activities, such as reading want ads or surfing Internet job sites, do not count as active search. Those individuals who were on layoff from a job to which they expected to be recalled and were available to work in the reference week also were classified as unemployed even if they could not meet the active job search test.

unemployment rate. The higher the participation rate and the lower the unemployment rate, the higher will be its E / P ratio.[11]

- The incidence of employment measures the percent of the members of a given demographic group who were employed for one or more weeks in the twelve-month period prior to the ACS interview. The ACS questionnaire asked each working-age respondent to report the number of weeks that they were employed in the prior twelve-month period, including weeks of paid vacation, sick leave, and military service.

- The intensity of employment measures the mean number of weeks in the prior twelve months that employed members of a given group worked. The weeks of work measure includes weeks of paid vacation and sick leave.

Defining and Measuring the Disabled Population in Massachusetts, New England, and the U.S.

This research paper is devoted to a description and analysis of the labor force behaviors, labor market outcomes, and labor market problems of the disabled working-age population (16-74) in Massachusetts, New England, and the U.S. in recent years, primarily 2003-2004. Any measure of the "disabled population" is dependent on a definition of the "disabled" and a household survey or administrative data reporting system that will generate the requisite data. The definition of the "disabled" that underlies most though not all of the estimates of the disabled population and labor force appearing in this paper is the same as that used by the U.S. Census Bureau in its official estimates of the nation's disabled population from the ACS survey and exactly the same as that used by the Rehabilitation Research and Training Center of Cornell University in its analysis of state and national data from the American Community Survey.[12] According to this definition, an individual in the ACS surveys will be classified as "disabled" if

[11] Algebraically, the employment ratio (E / P) is determined by the following formula:
E / P = L / P * E / L
Where E / L = 1 – U / L. The variable E / L measures the percent of the labor force that is employed while U / L represents the unemployment rate.

[12] We use somewhat different age categories than the Cornell University Center to estimate the disabled population of the state. The Cornell University reports focus on 21-64 year olds while we use the 16-74 age group as the focus of our analysis. See: Rehabilitation Research and Training Center on Disability Demographics and Statistics, 2004 Disability Status Reports, Cornell University, www.disabilitystatistics.org.

he or she meets any one of the following six criteria. The information on disability status is based on the self-reports of respondents to the ACS questionnaire and is not tied to the receipt of any cash assistance from the local, state, or federal government for the disabled or their participation in any rehabilitation program. These six criteria are the following:

- Person has any of the following long lasting conditions: blindness, deafness, or a severe vision or hearing problem
- Person has a long lasting condition that "substantially limits one or more basic physical activities," such as walking, climbing stairs
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty "learning, remembering, or concentrating"
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty "dressing, bathing, or getting around inside the home"
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty "going outside the home alone to shop or visit a doctor's office"
- Because of a physical, mental, or emotional condition lasting 6 months or more, this person has difficulty "working at a job or business".

Individual respondents to the ACS survey were allowed to check more than one disability type. As we revealed in an earlier research paper, there is a fairly high degree of overlap among a number of these six disability categories.[13] In Massachusetts, 61% of all disabled persons ages 16-74 were classified as disabled because of difficulty "working at a job or business," but most (83%) of these work-disabled individuals cited at least one other form of disability.

A second source of data on the disabled population in Massachusetts is based on the findings of the monthly Current Population Surveys. The definition of the disabled in the March CPS surveys is somewhat different from that in the ACS surveys.[14] While the two surveys yield

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[13] See: Andrew Sum, Ishwar Khatiwada, Paulo Tobar, Sheila Palma, et.al., The Adult Disabled Population (16-74) in Massachusetts…

[14] For a review of the disability definitions in the CSP survey,
See: U.S. Census Bureau, Disability Data from the Current Population Survey (CPS), Census Bureau web site, www.census.gov.

quite similar estimates of the "disabled" population, they yield quite different estimates of the disabled labor force and employed populations. The CPS surveys reveal a much lower rate of labor force attachment and employment among the disabled population.

The Labor Force Participation Behavior of the Disabled in Massachusetts, New England, and the U.S.: 2003-2004

Our first set of labor force activity measures provides information on the labor force participation rates of the disabled population 16-74 years old during 2003 and 2004.[15] Estimates are provided for the disabled in Massachusetts, New England, and the U.S. and for the non-disabled in each of these three areas. Estimates of labor force participation rates also are presented for an array of demographic and socioeconomic subgroups.

Over the 2003-2004 period, 36% of the disabled in Massachusetts were either working or actively looking for work (Table 2 and Chart 1). The labor force participation rate of the disabled in Massachusetts was modestly below that of their peers in the U.S. (36.8%), but this difference was not large enough to be classified as statistically significant. The disabled in the New England region as a whole were more likely to be participants in the labor force than those in Massachusetts (39% vs. 36%), a difference of approximately three percentage points.

The non-disabled adult population in the state was considerably more likely than the disabled to be active in the labor force in recent years. The 78.4% rate of labor force participation among the non-disabled 16-74 year old population in the Commonwealth was more than twice as high as that of the disabled. Similar findings applied to the entire New England region and the U.S. (Table 2).

Labor force participation rates among the disabled in Massachusetts frequently varied considerably across gender, age, race-ethnic, educational attainment, and nativity subgroups during the past few years. Males were more likely than disabled women to be active participants in the civilian labor force (41% vs. 31%, Chart 1). Similar sized gender differences in participation rates among the disabled prevailed across the country. The civilian labor force participation rates of disabled men and women in the Commonwealth were statistically identical to those of their peers in the U.S. (Chart 1).

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[15] The estimates are weighted two-year averages for each group where the weight for each year is the estimated number of disabled persons in the given group during each year.

The labor force participation rates of the disabled in Massachusetts also varied widely across age groups, ranging from a low of 13% among those 65-74 to highs of 52 to 60 percent among those 20-34 years old. Somewhat surprisingly, the labor force participation rate of the disabled in Massachusetts peaked for the 20-24 age group at 60% and fell steadily with age. Similar findings prevailed for the disabled in the United States. Among the non-disabled, labor force participation rates did not peak until the 45-54 age group was reached.

Across race-ethnic groups, the labor force participation rates of the disabled in Massachusetts varied from a low of 24 percent among Hispanics to highs of 38 to 43 percent among persons of "mixed races" and Blacks.[16] Hispanic disabled adults in Massachusetts were attached to the labor market at a much lower rate than their peers across the country (Table 2). Nationally, the disabled, Hispanic population had the same participation rates as Asians and White, non-Hispanics. The very limited labor force attachment of disabled Hispanics adults in Massachusetts combined with their very high rate of open unemployment (33%) yielded a very low employment rate for them, increasing their incidence of poverty and other income inadequacy problems and their dependence on various forms of cash transfer incomes to support themselves.

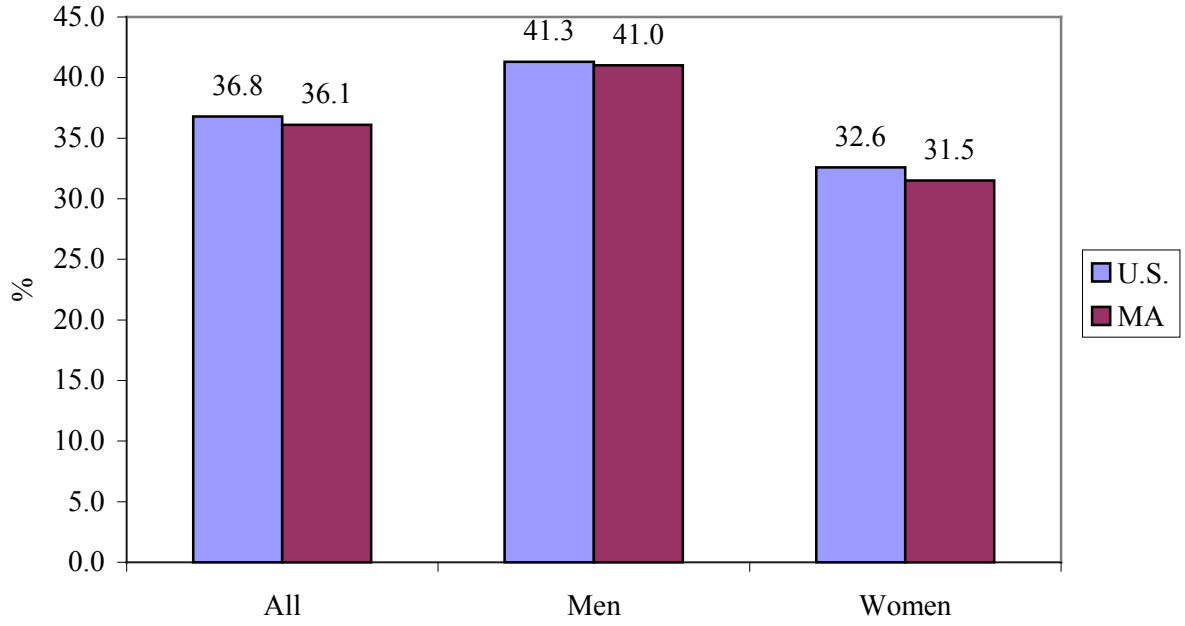
[16] Mixed race are persons citing more than one race in their response to the ACS survey. Hispanics can be members of any race, but they are identified separately and are not included in the counts for any race group.

Table 2:
Labor Force Participation Rates of 16-74 Year Olds in Massachusetts, New England, and the U.S., by Selected Demographic Traits, 2003-2004 Averages

	Massachusetts			New England			U.S.		
Group	Not Disabled	Disabled	All	Not Disabled	Disabled	All	Not Disabled	Disabled	All
All	78.4	36.1	73.6	78.6	38.8	73.8	75.5	36.8	70.3
Gender									
Male	84.3	41.0	79.5	84.2	42.9	79.3	82.2	41.3	76.8
Female	72.9	31.5	68.2	73.2	34.9	68.6	69.0	32.6	64.1
Race/Ethnic Group									
White	78.8	37.0	74.3	79.0	39.8	74.4	76.3	37.6	71.1
Black	77.8	42.6	73.0	77.0	36.7	71.7	75.8	31.6	68.3
Asian	73.1	36.8	70.5	73.1	42.0	70.9	69.5	37.6	67.2
Hispanic	77.8	24.4	68.8	77.1	29.9	70.5	73.4	37.7	69.6
Mixed	79.3	38.4	72.0	79.3	37.1	70.4	75.9	41.5	68.6
Other	82.2	32.7	77.4	78.3	33.9	70.8	72.6	38.5	65.9
Age									
16-19	50.0	44.6	49.6	52.7	41.6	51.9	47.7	38.7	47.1
20-24	79.4	60.4	78.3	79.6	62.4	78.5	78.2	60.0	77.1
25-34	86.5	51.9	84.5	86.5	54.4	84.6	83.3	56.6	81.6
35-44	85.9	46.8	82.8	86.6	50.2	83.5	85.2	50.6	81.9
45-54	89.1	42.9	83.9	89.4	45.9	84.0	86.6	45.0	80.5
55-64	76.3	31.7	67.9	75.9	35.4	68.1	69.9	30.7	60.9
65-74	27.8	13.1	23.7	28.4	14.3	24.4	26.0	12.0	21.4
Educational Attainment									
<12 or 12, No Diploma	58.5	22.9	50.3	59.2	25.0	51.6	58.3	24.3	50.9
High School Diploma	76.7	33.1	70.5	78.1	37.5	72.0	75.7	36.2	69.7
Some College	80.7	43.6	76.8	81.3	46.5	77.5	79.1	45.3	75.1
Bachelor's Degree	83.9	54.8	82.3	83.8	54.9	82.1	81.9	51.1	79.9
Master's or Higher Degree	85.3	54.8	84.0	84.5	54.3	82.9	83.2	52.5	81.1
Nativity Status									
Foreign-Born	76.7	28.8	71.2	75.9	32.1	71.0	72.5	36.0	69.1
Native-Born	78.8	37.8	74.2	79.0	39.9	74.3	76.1	36.9	70.5

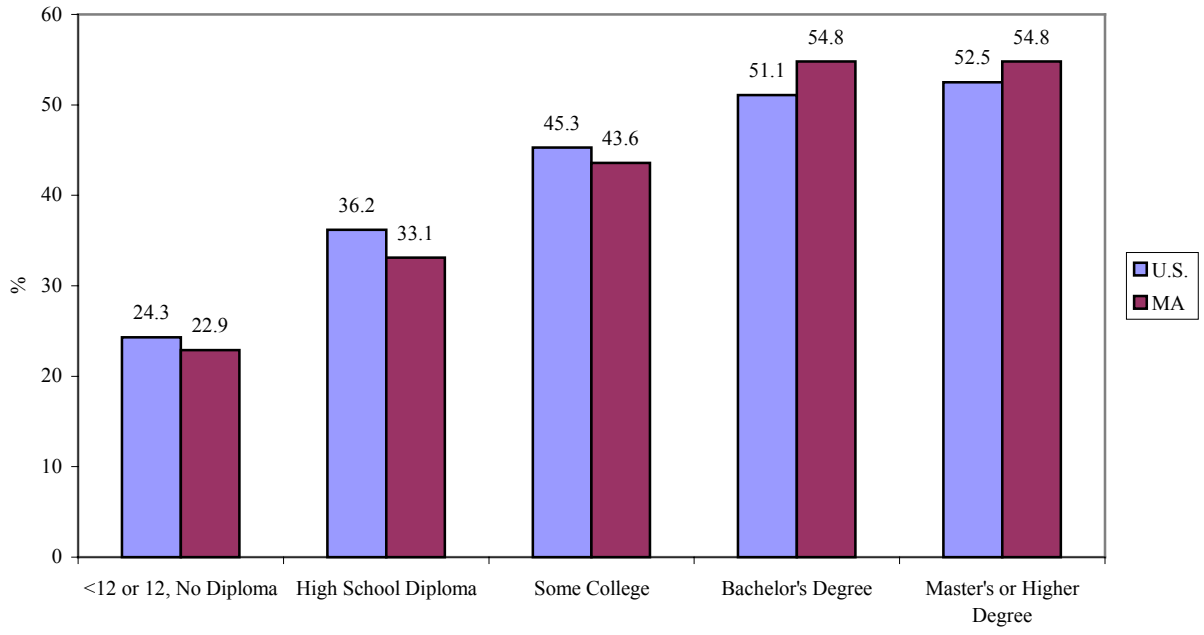
Source: U.S. Census Bureau, 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by CLMS.

Chart 1:
Civilian Labor Force Participation Rates of Disabled 16-74 Year Olds by Gender for Massachusetts and the U.S., (2003-2004 Two-Year Averages)



Labor force participation rates of the adult disabled population varied quite widely across educational attainment subgroups in Massachusetts, New England, and the U.S. During the 2003-2004 period, only 23 percent of the disabled population who lacked a regular high school diploma or a GED were active members of the labor force (Table 2 and Chart 2). Participation rates of the disabled rose strongly with additional years of schooling, increasing to 33% for those with a high school diploma, to 44% for those completing 1-3 years of college and to a high of 55% for those obtaining a Bachelor's or higher degree. The best educated members of the disabled population were two and one-half times more likely to be in the labor force than the least educated disabled. Relative differences in participation rates of more than two to one prevailed between the best and least well-educated members of the disabled population in New England and the U.S.

Chart 2:
Civilian Labor Force Participation Rates of Disabled 16-74 Year Olds by Educational Attainment, Massachusetts and U.S. (2003-2004 Two Year Average)



The labor force participation rates of the disabled in Massachusetts varied quite sharply by their nativity status. Only 29 percent of the foreign born disabled in Massachusetts were either working or actively looking for work versus 38 percent of the native born. This finding stands in sharp contrast to that for the entire nation (Table 2). Throughout the U.S., the participation rates of the native born and the foreign born disabled population were quite close to one another (36.9% vs. 36.0%), with less than a one percentage point difference between the two groups. This stands in sharp contrast to the much larger nine percentage point gap in the participation rates of these two groups in our state. As revealed in our earlier paper, a much higher fraction of the foreign born population, especially Hispanics, reported a disability problem in our state in 2003-2004. The much higher than expected disability rate among immigrants in our state and their considerably lower rate of attachment to the labor market calls for the immediate attention of state economic and workforce development policymakers. The problem seems to be geographically concentrated in a few counties of the state especially Hampden County.

Unemployment Problems of the Disabled Workforce in Massachusetts and the U.S. in 2003-2004

The ACS survey collected information on the job search behavior and layoff status of those persons who were not employed at the time of the survey. This information was used by the U.S. Census Bureau to identify the unemployment status of each jobless respondent. We then used the information on the employment and unemployment status of the disabled to estimate an array of unemployment rates for disabled adults in Massachusetts, New England, and the U.S. during 2003-2004. Comparisons with the unemployment rates of the non-disabled also are displayed in Table 3.

The disabled in Massachusetts faced a very high rate of open unemployment in 2003 and 2004. The average unemployment rate over this two-year period was 15.6%, which was two and one half times as high as the unemployment rate for the non-disabled (6.2%) in the state. The unemployment rate for the disabled in Massachusetts was one percentage point higher than that of their peers in the U.S. and more than two percentage points higher than that of the disabled workforce throughout New England. In both the U.S. and New England, the disabled faced unemployment rates that were slightly more than twice as high as those for the non-disabled. It should be noted that high unemployment often tends to reduce the willingness of the affected group to seek work, thereby artificially lowering the unemployment rate. Once a jobless person has stopped active search for work, he or she is no longer counted as unemployed. In a following section, we will estimate the size of the labor force reserve or the "hidden unemployed" among the state's disabled population in recent years.[17]

[17] Unfortunately, the ACS surveys did not capture information on the job desires of those adults who were not active in the civilian labor force at the time of the surveys. Information from the CPS household surveys for 2000 and 2005 will be used to estimate the pool of disabled persons in the labor force reserve and the underemployed.

Table 3:
Unemployment Rates of 16-74 Year Olds in Massachusetts,
New England, and the U.S., by Selected Demographic Traits, 2003-2004 Averages

	Massachusetts			New England			**U.S.**		
Group	Not Disabled	Disabled	All	Not Disabled	Disabled	All	Not Disabled	Disabled	All
All	6.2	15.6	6.8	6.0	13.3	6.4	6.9	14.6	7.5
Gender									
Male	6.4	16.9	7.0	6.0	14.0	6.6	6.8	14.8	7.4
Female	6.0	14.1	6.5	5.9	12.6	6.3	7.0	14.5	7.5
Race/Ethnic Group									
White	5.6	12.2	5.9	5.2	11.5	5.6	5.5	12.7	6.0
Black	10.4	32.5	12.2	11.1	26.9	12.2	13.1	22.7	13.8
Asian	7.2	19.1	7.7	7.0	18.8	7.5	6.5	13.6	6.8
Hispanic	10.4	34.3	11.8	11.0	24.2	11.8	8.9	16.5	9.3
Mixed	11.9	17.1	12.4	9.9	18.7	10.9	10.0	18.9	11.2
Other	7.6	19.7	8.1	8.2	19.1	9.1	11.3	21.0	12.4
Age									
16-19	21.5	33.4	22.2	19.0	30.1	19.6	21.6	35.2	22.4
20-24	12.0	20.5	12.4	10.9	16.7	11.2	12.4	23.5	12.9
25-34	5.9	22.2	6.5	5.7	18.7	6.2	6.8	18.3	7.3
35-44	4.6	14.2	5.0	4.6	14.5	5.1	5.4	15.2	5.9
45-54	4.4	13.5	4.9	4.4	11.3	4.9	4.6	12.7	5.2
55-64	5.1	12.1	5.7	4.5	9.5	5.0	4.4	9.2	5.0
65-74	4.4	7.6	4.9	3.5	6.8	4.1	4.1	7.5	4.7
Educational Attainment									
<12 or 12, No Diploma	16.7	26.1	17.6	14.7	22.5	15.5	14.3	21.7	15.1
High School Diploma	6.4	13.4	6.9	6.4	12.2	6.8	8.0	14.8	8.5
Some College	5.4	13.9	5.9	5.3	12.0	5.7	5.9	12.9	6.4
Bachelor's Degree	4.9	14.0	5.2	4.3	11.2	4.6	4.1	9.9	4.3
Master's or Higher Degree	3.7	9.8	3.9	3.2	6.6	3.4	2.9	7.7	3.1
Nativity Status									
Foreign-Born	7.2	24.6	8.0	7.2	21.1	7.9	7.2	14.5	7.6
Native-Born	6.0	14.0	6.5	5.7	12.4	6.2	6.9	14.6	7.4

Source: U.S. Census Bureau, 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by CLMS.

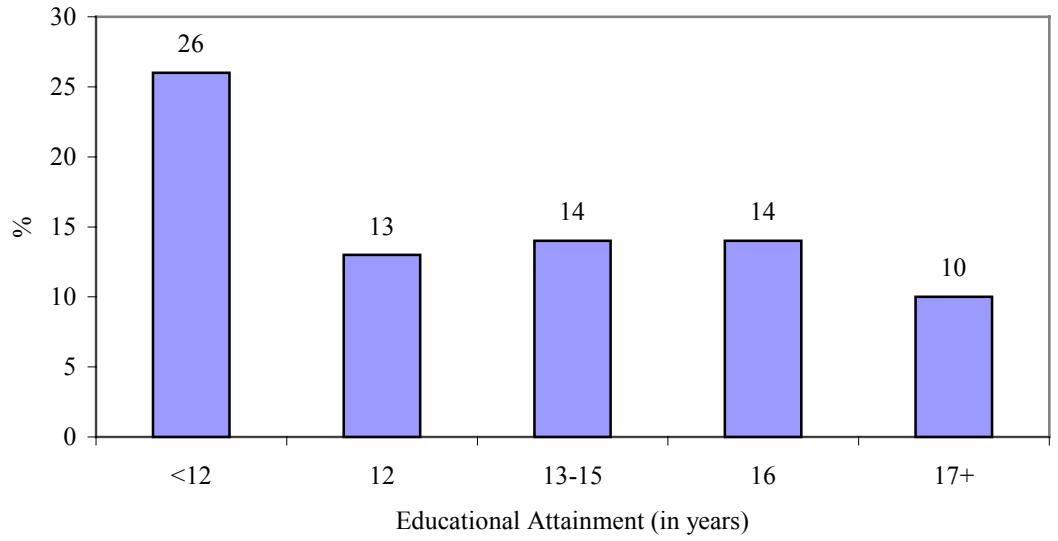
Unemployment rates among the disabled in Massachusetts varied quite considerably across major demographic and educational attainment subgroups in 2003-2004. The

unemployment rate of male disabled workers was 17 percent versus 14 percent for their female counterparts (Table 3). Both of these unemployment rates were twice as high as those of their non-disabled peers. Unemployment rates varied more widely across age groups, ranging from a high of 33% among disabled teens to a low of slightly under 8% for the oldest age group (65-74). Disabled adults in the 20-34 age group encountered unemployment rates greater than 20 percent, and all other age groups had unemployment rates in the double digits. The age patterns of unemployment rates among the disabled in the U.S. and New England were quite similar to that of the state.

Unemployment rates among the disabled in Massachusetts also differed quite substantially across race-ethnic groups, varying from a low of 12% among White, non-Hispanics to 33-34% among Blacks and Hispanics. The latter two race-ethnic groups experienced unemployment rates that were nearly three times as high as those of their White, non-Hispanic counterparts. Disabled Black and Hispanic adults also faced unemployment rates that were more than three times higher than those of their non-disabled peers in the state. These very high unemployment rates of Black and Hispanic disabled adults in the Commonwealth were much higher than those of their peers across the country. For example, the unemployment rate of Hispanic adults in Massachusetts was more than twice as high as that of their peers across the nation (34% vs. 16%). The severe structural labor market problems of disabled Hispanics in Massachusetts calls for special attention from the state's education and workforce development community. These high unemployment rates combined with previous findings on their low rate of attachment to the labor force dramatically depress the employment rate of disabled Hispanics.

As expected, unemployment rates of the disabled in Massachusetts and the U.S. varied sharply across educational attainment subgroups (Table 3 and Chart 3). The unemployment rate of those disabled adults lacking a regular high school diploma or GED in Massachusetts was 26%, twice as high as the unemployment rates of disabled workers with a high school diploma, some college, and a Bachelor's degree, and nearly three times as high as the unemployment rate of the disabled with a Master's or higher degree (9.8%) (Chart 3). In every educational attainment subgroup, except high school dropouts, the unemployment rates of the disabled were between two and three times as high as those of their non-disabled peers. Again, very similar findings prevailed across the country.

Chart 3:
The Unemployment Rates of Disabled Workers (16-74) in Massachusetts by Educational Attainment, 2003-2004 Averages (in %)



The Employment Rates of the Disabled Population in Massachusetts, New England, and the U.S.: 2003-2004

Our third key measure of the labor force activity of the disabled population in Massachusetts is the employment / population ratio (E / P). The E / P ratios of the 16-74 year old disabled population in the state over the 2003-2004 period are displayed in Table 4 for all 16-74 year olds combined and an array of demographic and socioeconomic subgroups. Comparisons with findings for the New England region and the nation as a whole are also provided in this table and an accompanying set of bar charts.

The E / P ratio of the 16-74 year old disabled population in Massachusetts during 2003-2004 was only 30.4%, slightly below the national average of 31.4% and more than three full percentage points below the E / P ratio for all of the disabled in New England (33.7%). Massachusetts was characterized by the lowest E / P ratio for the disabled among the six New England states (Chart 4).[18] These E / P ratios ranged from 30.4% in Massachusetts to a high of 40.6% in Vermont.

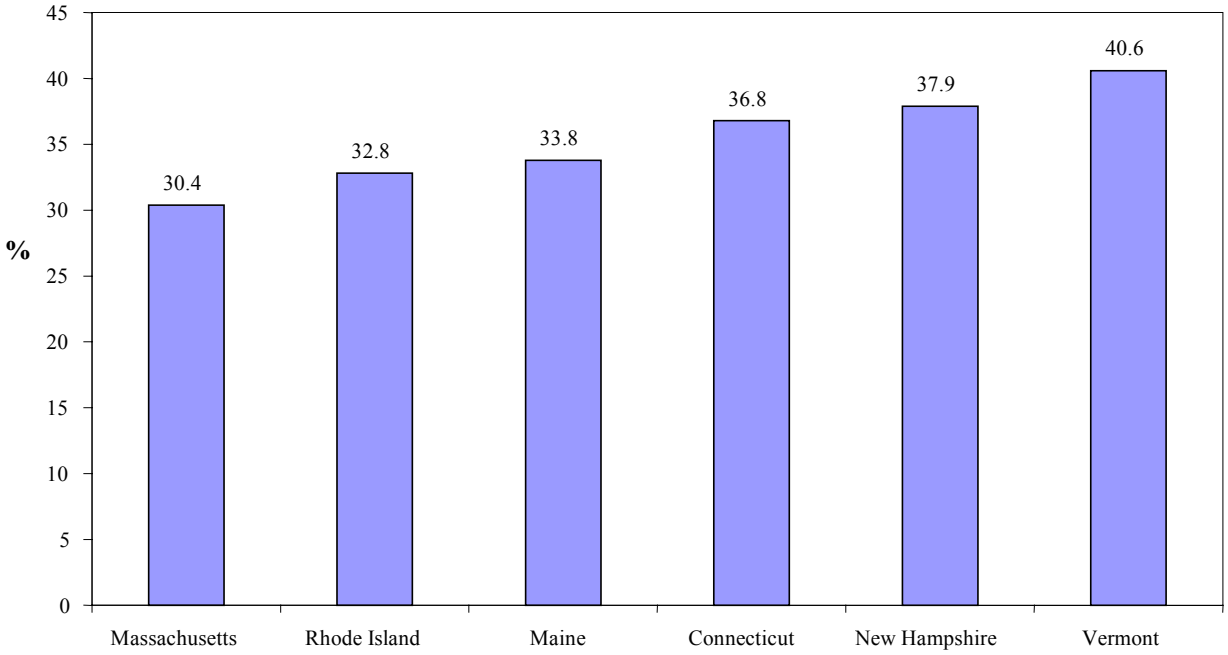
[18] See Appendix A for a more detailed breakout of E / P ratios for the disabled across the six New England states.

Table 4:
Employment-Population Ratios of 16-74 Year Olds in Massachusetts, New England, and the U.S., by Selected Demographic Traits, 2003-2004 Averages

	Massachusetts			New England			**U.S.**		
Group	Not Disabled	Disabled	All	Not Disabled	Disabled	All	Not Disabled	Disabled	All
All	73.5	30.4	68.7	73.9	33.7	69.1	70.3	31.4	65.1
Gender									
Male	78.9	34.1	73.9	79.1	36.9	74.1	76.6	35.2	71.1
Female	68.5	27.0	63.7	68.9	30.5	64.3	64.2	27.9	59.3
Race/Ethnic Group									
White	74.4	32.5	69.9	74.9	35.2	70.2	72.1	32.8	66.8
Black	69.7	28.7	64.2	68.5	26.8	62.9	65.9	24.4	58.8
Asian	67.9	29.8	65.1	68.0	34.1	65.6	65.0	32.4	62.6
Hispanic	69.8	16.0	60.7	68.7	22.7	62.2	66.9	31.5	63.2
Mixed	69.8	31.8	63.1	71.5	30.2	62.7	68.2	33.7	60.9
Other	75.9	26.3	71.2	71.8	27.4	64.4	64.4	30.4	57.7
Age									
16-19	39.3	29.7	38.6	42.7	29.1	41.7	37.4	25.1	36.6
20-24	69.9	48.0	68.6	70.9	52.0	69.7	68.6	45.9	67.1
25-34	81.4	40.4	79.0	81.7	44.2	79.3	77.7	46.3	75.6
35-44	82.0	40.1	78.6	82.6	42.9	79.2	80.6	42.9	77.0
45-54	85.2	37.0	79.8	85.5	40.7	79.9	82.7	39.3	76.3
55-64	72.5	27.8	64.1	72.5	32.0	64.7	66.8	27.9	57.9
65-74	26.6	12.1	22.5	27.4	13.4	23.4	25.0	11.1	20.4
Educational Attainment									
<12 or 12, No Diploma	48.8	16.9	41.4	50.5	19.4	43.6	49.9	19.0	43.3
High School Diploma	71.8	28.7	65.7	73.1	32.9	67.1	69.7	30.8	63.7
Some College	76.4	37.6	72.3	77.0	40.9	73.1	74.5	39.5	70.3
Bachelor's Degree	79.8	47.1	78.1	80.2	48.7	78.4	78.6	46.1	76.5
Master's or Higher Degree	82.2	49.4	80.7	81.8	50.7	80.1	80.8	48.5	78.6
Nativity Status									
Foreign-Born	71.2	21.7	65.5	70.4	25.3	65.4	67.2	30.8	63.8
Native-Born	74.1	32.5	69.4	74.5	35.0	69.7	70.9	31.5	65.3

Source: U.S. Census Bureau, 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by CLMS.

Chart 4:
E / P Ratios of the 16-74 Year Old, Disabled Population in the Six New England States, 2003 – 2004 Averages (in %)

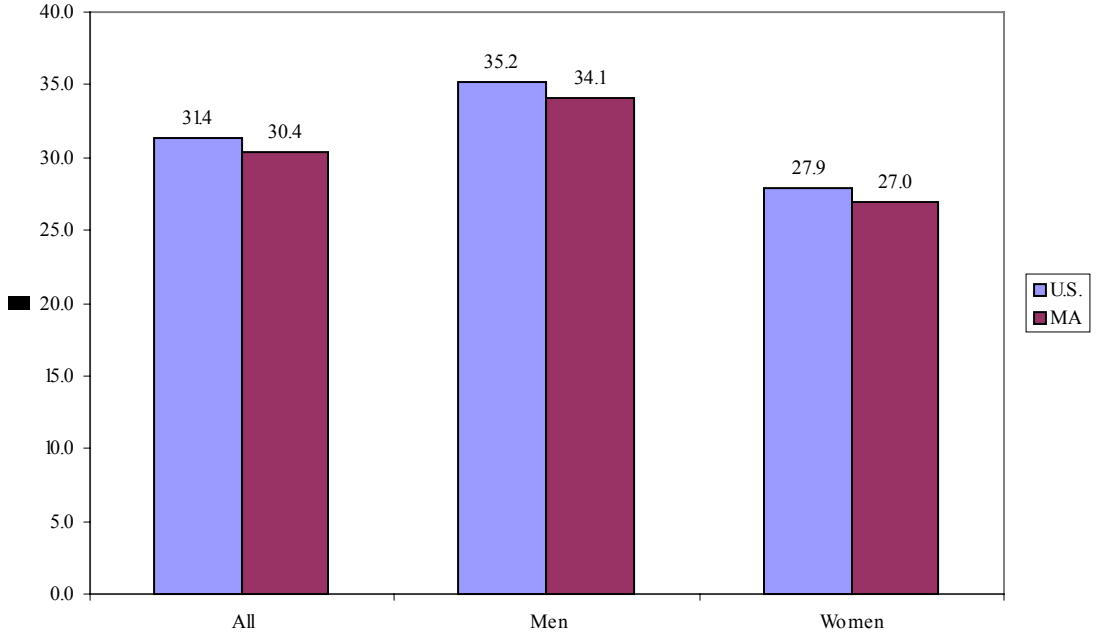


Similar to findings for the nation and the region, the E / P ratio of the disabled in Massachusetts was considerably below that of their non-disabled counterparts (30 per cent vs. 73 per cent). A gap of 43 percentage points existed between the E / P ratios of these two groups. Nationally, the gap between the E / P ratios of the non-disabled and the disabled was 39 percentage points.

Within Massachusetts, the E / P ratios of the disabled tended to vary fairly widely across gender, age, race-ethnic, educational attainment, and nativity subgroups. Similar to the pattern for the U.S., disabled men in Massachusetts were more likely to be employed than their female counterparts (34% vs. 27%). Both gender groups were employed at rates quite similar to those of their U.S. counterparts (Chart 5). Across the seven age groups, E / P ratios of the disabled in Massachusetts ranged from a low of 12 per cent among the oldest group (65-74) to highs of 40 to 48 per cent among those 20-44 years old. E / P ratios tended to decline after age 44 and fell sharply after age 54, declining from 37% for those 45-54 to 28% for those 55-64 and to a low of 12% for those in the 65-74 age group. Very similar age patterns were observed for the region and

the nation. This set of findings has important implications for workforce development policy for the disabled in our state and the nation. Over the coming decade, the population of our state will be aging with projected rapid growth in the number of 55-64 and 65-74 year olds. The older disabled population also will be increasing at a very high rate. In our earlier paper, we projected that the number of 55-74 year old disabled persons in the Commonwealth would likely increase by 41 to 53 per cent between 2004-2014.[19] If the existing age pattern of employment rates among the disabled holds constant over the decade, then the overall E / P ratio of the state's disabled will fall sharply unless substantive efforts are made to boost the labor market attachment of the state's older, disabled population.

Chart 5:
E / P Ratios of the 16-74 Year Old, Disabled Population by Gender for Massachusetts and the U.S., 2003 – 2004 Averages (in %)



The E / P ratios of the disabled in Massachusetts varied only modestly across race-ethnic groups, with one major exception, Hispanics. The E / P ratios of disabled Hispanics was 16%, only one-half as high as that of Asians, Blacks, and Whites. The Hispanic disabled contained a disproportionate share of high school dropouts, immigrants, and persons with limited English-

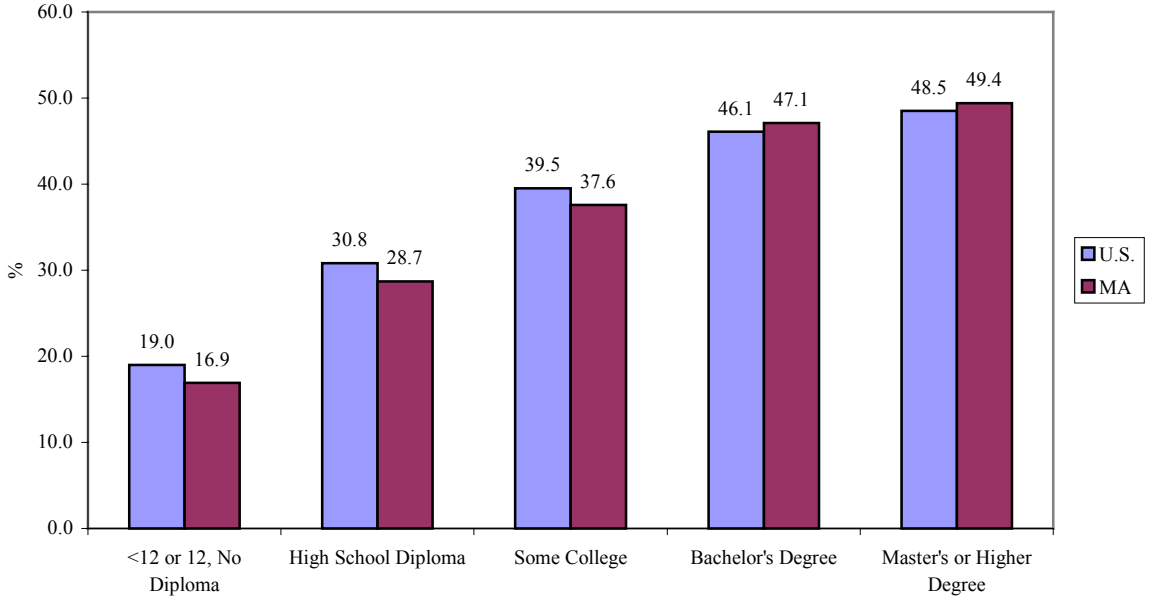
[19] See: Andrew Sum, Ishwar Khatiwada, et al, The Adult Disabled Population (16-74) in Massachusetts, "Table 22," p. 41.

speaking ability, factors which would be expected to reduce their employability.[20] Still, the E / P ratio of disabled Hispanics in Massachusetts was only one-half as high as that of their counterparts across the nation during the same two year period (16% vs. 32%). Not only were Hispanics in Massachusetts more likely to report themselves as disabled, but they were much less likely than their other race-ethnic counterparts to be employed in the state. The very limited employability of the Hispanic disabled population is deserving of further attention by the state's workforce development and vocational rehabilitation community.

The educational attainment of the disabled population in Massachusetts, New England, and the U.S. was positively and strongly associated with their employment status (Table 4 and Chart 6). Within Massachusetts, the E / P ratios of the disabled varied from a low of 17% for those with no high school diploma / GED certificate to 29% for high school graduates, to nearly 38% for those with 1-3 years of college to highs of 47% to 49% for those disabled adults with a Bachelor's or higher degree. Disabled adults with a Bachelor's degree were nearly three times more likely to be working than those lacking a high school diploma. Very similar patterns prevailed in the region and across the country. Disabled adults in Massachusetts without a diploma and those with a diploma but no post-secondary schooling were employed at lower rates than their national counterparts while those Massachusetts' adults obtaining a Bachelor's or higher degree were somewhat more likely to be working than their national peers. Formal schooling, thus, had a number of important impacts on the disability status of adults and their employability once disabled. Adults with more years of schooling were less likely to be disabled, more likely to be active in the labor force if they were disabled, and more likely to find work when they did participate in the labor force. As will be noted in a following section, they also had considerably higher levels of earnings when they did work. Limited schooling of the disabled has a number of adverse consequences for their employability and earnings.

[20] Studies of the labor market behavior and experiences of immigrants in Massachusetts reveal that formal schooling and English-language proficiency have powerful impacts on their employment rates, access to more highly skilled jobs, and their wages and earnings.
See: Andrew Sum, Johan Uvin, Dana Ansel, et al, The Changing Face of Massachusetts, Massachusetts Institute for A New Commonwealth, Boston, 2005.

Chart 6:
E/P Ratios of the Disabled Population (16-74) in Massachusetts and the U.S. by Educational Attainment, 2003-2004 Averages (in %)



The above findings on the employment rates of the disabled in Massachusetts can be combined with findings in our earlier report on the educational characteristics of the disabled to estimate the incidence of jobless, disability problems among the adult population of the state in recent years. In Table 5, we present estimates of the percent of the non-institutionalized population of the state 16-74 years old that were disabled during 2003-2004 in column A and the percent of the disabled that were jobless (not employed) by educational attainment in column B. By multiplying the findings in column A by those in column B, we can generate estimates of the share of the adult population that were both disabled and jobless in 2003-2004. These latter estimates are presented in column C.

Table 5:
Percent of the 16-74 Year Old Population in Massachusetts That Was Disabled, Jobless if Disabled, and Both Jobless and Disabled, 2003-2004 Averages

Educational Attainment	(A) Disabled	(B) Jobless if Disabled	(C) Jobless and Disabled
All	11.3	69.6	7.9
<12	23.0	83.1	19.1
12 or GED	14.2	71.3	10.1
13-15 years	10.6	62.4	6.6
B.A.	5.5	52.9	2.9
M.A. or higher degree	4.4	50.6	2.2

Source: 2003 and 2004 ACS surveys, public use files, tabulations by authors.

The incidence of disability problems varied considerably by educational attainment. Nearly one-fourth of the state's adults with no high school diploma/GED cited a disability problem versus only 14 percent of high school graduates, slightly over five percent of those with a Bachelor's degree, and only four percent of those with a Master's or higher degree. Adults lacking a high school diploma were five times more likely to report a disability problem than those adults who held a Master's or higher degree. These different incidences of being disabled by educational attainment reflect the outcomes of a wide variety of past experiences and behaviors of adults, including differences in their health status during their childhood and adolescent years, access to health care during their adult years, the greater exposure of less educated adults to health risks at home and on the job, and the higher incidence of mental disabilities and substance abuse problems among the less educated.

The incidence of joblessness problems among the disabled in our state also varied widely by educational attainment in 2003-2004. Eighty-three percent of the disabled without a regular high school diploma or GED were jobless versus 71% of those with a high school diploma but no post-secondary schooling, and only one-half of those with a bachelor's or higher degree.

When the findings on the incidence of disability problems are combined with those on joblessness among the disabled, we observe the following outcomes. Nearly 1 of every 5 adult high school dropouts ages 16-74 were both disabled and jobless during 2003-2004 in our state. The incidence of such problems among high school graduates (10%) was only one-half as high,

and it fell to 2-3 percent among those adults with a Bachelor's or higher degree. Massachusetts adults lacking a regular high school diploma were nine times more likely than those with a Master's degree to be both disabled and jobless. In the U.S., the relative difference in the incidence of such problems between the same two educational groups was only five to one in the 2003-2004 time period (Table 6).

Table 6:
Percent of the 16-74 Year Old Population of the United States Who Were Disabled, Jobless if Disabled, and Both Jobless and Disabled, 2003-2004 Averages

	(A)	(B)	(C)
Educational Attainment	Disabled	Jobless if Disabled	Jobless and Disabled
All	13.4	68.6	9.2
<12	21.6	81.0	17.5
12 or GED	15.3	69.2	10.6
13-15	12.0	60.5	7.2
B.A.	6.4	53.9	3.4
M.A. or higher degree	6.7	51.5	3.4

Source: 2003 and 2004 ACS surveys, public use files, tabulations by authors.

Employment rates of the disabled in Massachusetts varied quite considerably by nativity status. Nearly one-third of the native-born, disabled population in Massachusetts were working in 2003-2004 versus fewer than 22 per cent of the foreign born population. The gap in employment rates between the native-born and foreign born, disabled populations in the U.S. was considerably smaller, less than one percentage point. The state's rank among all 50 states on this measure was second lowest in the country. The weak labor force attachment and employment rates of the disabled, immigrant population in the state need to be given more attention by workforce development policymakers. The low labor force attachment of the disabled, immigrant population reduces the size of the resident labor force, limits their future employability and earnings, and increases the fiscal burden on the state's taxpayers. The fiscal costs of supporting jobless, disabled immigrants are quite substantial.

Determinants of Employment Among 16-74 Year Old Disabled Persons in Massachusetts in 2003: Findings of A Multivariate Statistical Analysis

In the above discussions of the employment rates of disabled persons in various demographic and educational groups, we were not able to control for other differences in their demographic and socioeconomic backgrounds. Does the employment status of the disabled vary significantly across age, gender, and educational attainment of subgroups, once we control for other differences in their personal and family backgrounds. To test the independent impacts of human capital, demographic, and family background variables on the employment status of the disabled, we constructed a set of multivariate statistical models of the employment behavior of the disabled in Massachusetts and the U.S. during 2004. These models are based on core elements of the neoclassical theory of labor force participation behavior.[21] In these models, the dependent variable is the employment status of a 16-74 year old, disabled person during 2004.[22] The predictor variables include the gender, race-ethnic backgrounds, age group, nativity status, educational attainment, length of stay of foreign born immigrant in Massachusetts, marital status, other family income, and other personal income of disabled persons.[23] An employment model was estimated for all 16-74 year old disabled persons and for both gender groups separately. Linear probability models based on ordinary least squares regression techniques were used to estimate the coefficients of the predictor variables.

Estimates of the coefficients for each of the predictor variables are displayed in Table 7. Findings for the combined set of disabled persons reveal that only 10 of the 20 predictor variables were statistically significant. Disabled males were approximately 5 percentage points more likely to be employed than their female counterparts. Age had no significant effects on the probability of employment of the disabled until we reached the very top of the age distribution. Older disabled persons (65-74 years old) were nearly 17 percentage points less likely to be employed than their younger 25-34 years old disabled peers, the base group.

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[21] For a review of the basic theoretical foundations of neoclassical labor force participation and labor supply theory, see: (i) Ronald Ehrenberg and Robert S. Smith, Modern Labor Economics: Theory and Public Policy, (7th Edition), Addison-Wesley, Reading, MA 2000; (ii) Mark Killingsworth, Labor Supply, Cambridge University Press, Cambridge, 1983.

[22] The dependent variable is a dichotomous variable that takes on the value of 1 if the respondent were employed at the time of the 2004 American Community Survey and the value of 0 if he/she was not employed.

[23] In neoclassical labor force participation theory, increased personal or other family income should increase the demand for leisure by the individual and reduce the likelihood of employment.

All of the educational variables in the model for all 16-74 years old disabled persons were statistically significant. A disabled person without a high school diploma or a GED was 17 percentage points less likely than their peers with a high school diploma or GED to be employed. At the upper end of the educational attainment distribution, a disabled person in Massachusetts with 1-3 years of college was five percentage points more likely than those with only a high school diploma or a GED to be employed. The impact of a Bachelor and Masters' degree on the likelihood of employment was even higher. Those disabled persons with a Bachelor's and Master's degree were 17 and 20 percentage points, respectively, more likely to be employed than high school graduates. There was a more than 30 percentage point difference in employment rates between bachelor degree holders and high school dropouts, a very considerable difference.

Findings of the multivariate statistical analyses of the correlates of the employment behavior of 16-74 year old disabled men and women with respect to the influence of the above predictor variables were quite similar with a few exceptions. Among men, disabled Blacks in Massachusetts were 13 percentage points less likely to be employed than their White counterparts while Black women were just as likely as disabled White women to be working. Both older men and women (65-74 years old) were less likely to be employed than their younger peers. Formal schooling had quite uniform and statistically significant effects on the likelihood of employment among both men and women. Those male and female adults lacking a high school diploma were significantly less likely to be employed than high school graduates. Disabled men without a high school diploma or a GED were 20 percentage points less likely to be employed than their peers with a high school diploma or a GED. Among women, employment impacts for those with a Bachelor's or a Masters degrees was substantially higher than that of their male counterparts. For example, a Bachelor's degree raised the likelihood of employment among women by 22 percentage points versus 12 percentage points for men. Married disabled men were 10 percentage points more likely to be employed than their peers who were not married while marital status had no significant effect on the employment status of women.

Coefficients of the variables representing other family income and other personal income in the models of the employment behavior of the disabled are of opposite signs, contrary to the expectations of neoclassical labor supply theory. The impact of other family income on the likelihood of employment among the disabled was positive and statistically significant although

quite modest in size. Every $10,000 of other family income would increase the likelihood of employment by about 1.2 percentage points. The impact was stronger for women than for men. Other income of the individual (including cash transfers) was negative as hypothesized and statistically significant. Every additional $10,000 in other own income would reduce the likelihood of employment by 4 percentage points for all of the disabled and by 5 percentage points for men.

Table 7:
Estimated Impacts of Gender, Race-Ethnicity, Nativity Status, Educational Attainment, Marital Status, and Income Variables on the Expected Employment of 16-74 Year Old Disabled Workers in Massachusetts, 2003 (In Percentage Points)

Coefficients	All	Men	Women
Constant	0.181*	0.378**	0.125
Male	0.046**		
Black	-0.050	-0.134*	-0.004
Asian	-0.012	0.029	-0.062
Hispanic	-0.049	-0.057	-0.050
Other	-0.030	0.101	-0.101
Age 16-19	0.062	0.008	0.097
Age 35-44	0.035	0.001	0.050
Age 45-54	0.040	-0.013	0.068
Age 55-64	-0.052	-0.076	-0.042
Age 65-74	-0.167***	-0.204**	-0.146**
Native	0.149*	0.067	0.146
Established Immigrant	0.128	0.012	0.151
1-12 Years of school	-0.127***	-0.184***	-0.070*
1-3 Years of college	0.051*	0.000	0.094***
Bachelor's degree	0.172***	0.118**	0.216***
Masters or higher degree	0.203***	0.121**	0.288***
Married	0.042	0.099**	-0.008
Other family income	0.001**	0.001	0.002**
Other family income squared	0.000003***	0.00001	0.00001**
Other Income	-0.004***	-0.005**	-0.003**

*** significant at .01 level
** significant at .05 level
* significant at .10 level

The E / P Ratios of the Disabled Across Geographic Areas of the State in 2003-2004

Data on the labor force status of the disabled population 16-64 years old in selected substate areas are available from the 2003 and 2004 ACS surveys. The U.S. Census Bureau has

provided employment estimates for the 16-64 year old disabled population in the following eight counties of the state and two central cities (Boston and Springfield):[24]

- Bristol
- Essex
- Hampden
- Middlesex
- Norfolk
- Plymouth
- Suffolk
- Worcester

Estimates of the employment rates of the 16-64 year old disabled population in 2003-2004 for each of these eight counties and two central cities are displayed in Charts 7 through 9. The first of these charts displays the data for all 16-64 year old disabled residents of these counties and cities while the following two charts provide the same information for men and women separately. The counties and cities are displayed in rank order from highest to lowest by the size of their E / P ratios for the disabled population.

In 2003-2004, the E / P ratios of the disabled in the eight counties ranged from a lows of 28 per cent in Suffolk County and 30% in Hampden County to highs of 39% in Norfolk County and 41% in Middlesex County.[25] The city of Springfield was characterized by an extremely low employment rate (20%) for its disabled population while Boston achieved an employment rate slightly above 30%. The city of Springfield and Hampden County also were characterized by a high rate of disability problems among their adult populations. The structural and economic barriers to the employment of the adult disabled population in these two geographic areas need to be more fully understood.

The rankings of the eight counties by their E / P ratios for the disabled tended to vary across gender groups. Among men, employment rates were highest in Bristol (43%) and Middlesex Counties (43%) and lowest in Suffolk County (29%). Among disabled women, however, employment rates were highest in Norfolk (40%) and Middlesex Counties (39%) but lowest in Bristol (26%) and Essex Counties (23%). The city of Springfield was characterized by extremely low employment rates for both disabled men and women. The very low employment rates of the disabled in this city contribute to the low employment rate of the disabled in Hampden County. High SSI caseloads appear to be a key contributing factor.

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[24] The public use files from the 2003 and 2004 ACS surveys do not contain sub-state geographic identifiers. The U.S. Census Bureau did, however, publish selected data tables on the employment status of the disabled for selected counties and two central cities in Massachusetts.

[25] These employment rates are simple two year averages for each geographic area. The E / P ratio for each of the two years was weighted equally.

Chart 7:
Employment to Population Ratios of the Disabled 16-64 Year Old Population, in Selected Massachusetts Counties and Cities, 2003-2004 ACS
(in %)

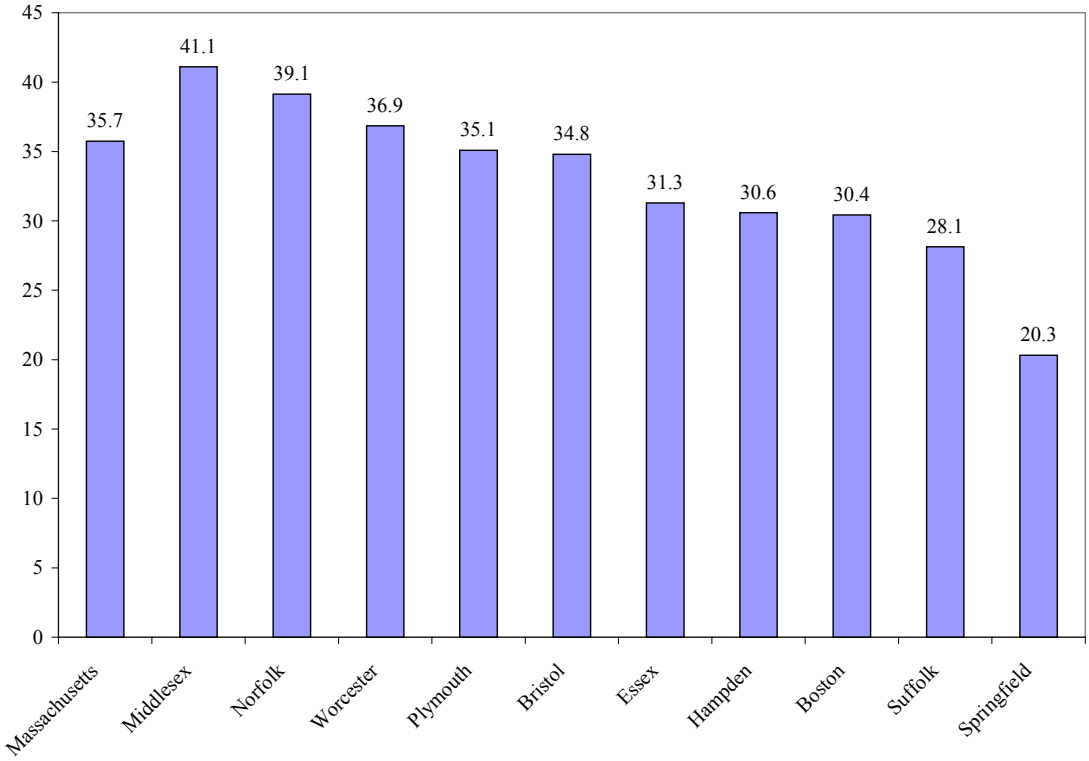


Chart 8:
Employment to Population Ratios of the Disabled 16-64 Year Old Female Population in Selected Massachusetts Counties and Cities, 2003-2004 ACS (in %)

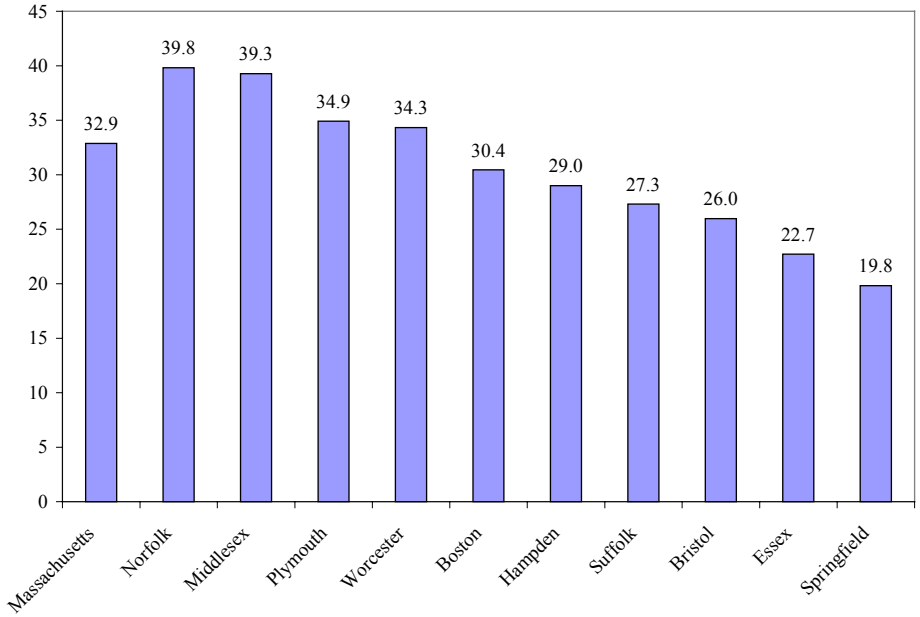
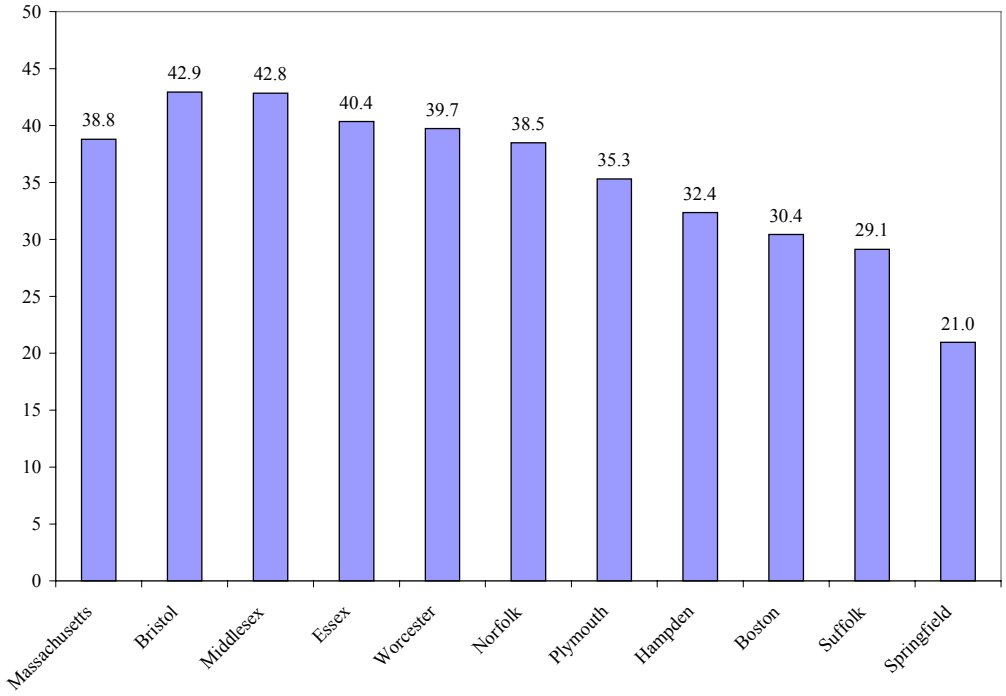


Chart 9:
Employment to Population Ratios of the Disabled 16-64 Year Old Male Population in Selected Massachusetts Counties and Cities, 2003-2004 ACS (in %)



Simulating the Employment Effects of Making Massachusetts a National Leader in the Employment of the Disabled

In recent years, the employment rate of the disabled in Massachusetts lagged slightly behind that of the nation and more considerably behind that of the other five New England states. When we compared Massachusetts' employment rate for all 16-74 year old disabled persons with that for each of the other 49 states and the District of Columbia, the state ranked only 38th highest. Massachusetts performed more strongly for college educated, disabled workers but fell near the bottom for the least well educated. The employment rates of the five states with the highest employment rates for the disabled and those with the five lowest employment rates are displayed in Table 8. There are extraordinarily large differences in these employment rates. The five top performing states for the disabled (Wyoming, South Dakota, Alaska, Minnesota, and North Dakota) achieved employment rates for the disabled ranging between 42 and 44 per cent during 2003 – 2004. In sharp contrast, the five worst performing states (all of which were located in the South) had employment rates of only 20 to 26 per cent. The simple, unweighted average employment rate of the five top states was 43 per cent versus slightly under 25 per cent for the five lowest performing states, a relative gap of 75 per cent.

Table 8:
Per Cent of the 16-74 Year Old Disabled Population Who Were Employed in Massachusetts and the Five States with the Highest and Lowest Employment Rates for the Disabled, 2003-2004 Averages

State	(A) Employment Rate (in %)	(B) Rank Among 50 States and D.C.
Five Highest		
Wyoming	44.1	1st
South Dakota	43.4	2nd
Alaska	43.4	3rd
Minnesota	42.5	4th
North Dakota	41.8	5th
Average of Five Highest States	43.0	
Five Lowest		
Louisiana	26.7	47th
Mississippi	26.4	48th
Alabama	25.7	49th
Kentucky	24.1	50th
West Virginia	20.0	51st
Simple Average of Five Lowest States	24.6	
Massachusetts	30.4	38th

Source: 2003 and 2004 American Community Surveys, public use files, tabulations by authors.

Massachusetts' employment rate for the disabled during 2003-2004 was only 30.4 per cent, and the state ranked only 38th highest on this employment measure. How many more disabled persons in Massachusetts would have been at work in recent years if the state had matched the employment rate of the top five performing states? To answer this question, we conducted a simple simulation exercise in which we increased the employment rate of the disabled in Massachusetts to the average of the top five states. By raising the employment rate of the disabled in Massachusetts to 43%, the number of disabled persons with a job would have increased from 154,900 to 218,840 in 2003-2004, a gain of nearly 64,000 persons (Table 9). This is an extraordinary rise in the number of disabled persons with a job, equivalent to two per cent of the total number of employed persons 16 and older in the Commonwealth in the past year. By devoting more public and private resources to the education, training, and employment of the disabled in our state, a major expansion of job opportunities for the disabled would be possible, helping facilitate the growth of the state's resident labor force, contribute to efforts to reduce

available job vacancies in the state, and raise the output of the Massachusetts economy. Such employment policies would also raise federal and state tax revenues and reduce both cash and in-kind transfers to the disabled.

Table 9:
Simulating the Overall Employment Effect Upon the Disabled in Massachusetts of Raising the E / P Ratio to the Average of the Five Highest States in 2004

Variable	Value
Actual Number of Employed, Disabled Persons in Massachusetts	154,900
Actual E / P Ratio	30.4%
Hypothetical E / P Ratio	43.0%
Hypothetical Number of Disabled Employed in 2004	218,840
Increase in the Number of Disabled Employed	~+64,000

The Employment Experiences of the Disabled Adult Population in Massachusetts, New England, and the U.S. Throughout the Calendar Year, Findings for 2003-2004

In addition to collecting information on the employment status of all working-age respondents at the time of the survey, the ACS questionnaire also gathered information on the number of weeks that each working-age household member was employed during the twelve month period immediately prior to the time that the survey was completed.[26] Given the responses to the question on weeks worked in the prior twelve-month period, we identified all individuals who worked 1 or more weeks for pay or profit in the prior year. Estimates of the share of the disabled and non-disabled 16-74 year old population in Massachusetts, New England, and the U.S. that worked at some point in the prior twelve-month period are displayed in Table 10. The estimates are weighted two-year averages. Similar estimates are also provided for gender, age, race-ethnic, educational attainment and nativity subgroups.

Overall, 40 percent of the disabled, adult population in Massachusetts worked at some time during calendar years 2003 and 2004. The incidence of employment among the disabled in Massachusetts was within one percentage point of that for the U.S. (41.1%), a difference that

[26] Since the ACS survey was conducted over all twelve calendar months of each year, this twelve month period will vary from one respondent to another. For example, a person completing the questionnaire in January 2004 would be reporting on the January 2003-December 2003 period while a person completing the questionnaire in December 2004 would be reporting on her/his employment experiences between December 2003 and November 2004.

was not statistically significant. The employment rate of the disabled in Massachusetts, however, was nearly three and a half percentage points below the New England-wide average of 43.5%, a difference that was statistically significant.[27] Among the non-disabled in Massachusetts, 83% of the adult population (16-74) was employed at some time during the year in 2003-2004. Their employment rate was more than twice as high as that of the disabled in our state and exceeded the employment rate for the non-disabled in the U.S. by three percentage points (83% vs. 80%).

Similar to our earlier findings for E/P ratios, disabled males in Massachusetts were more likely to have been employed than disabled females (45% vs. 35%). A similar sized gender gap existed in the U.S. The estimated incidences of employment among disabled men in the U.S. and Massachusetts were statistically identical as were those for women in both areas (Table 10 and Chart 10).

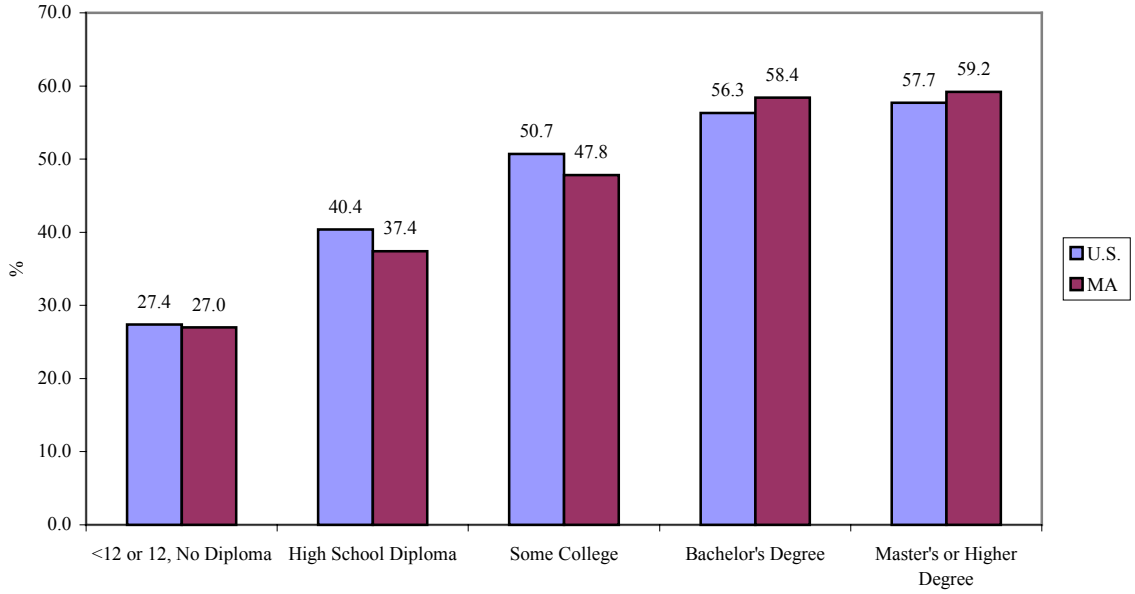
[27] For the five states outside of Massachusetts, the employment rate of the disabled was above 46%.

Table 10:
Percent of 16-74 Year Old Disabled and Non-Disabled Individuals Who Worked During 2003-2004 in Massachusetts, New England, and the U.S., by Selected Demographic Traits, 2003-2004 Averages

	Massachusetts			New England			U.S.		
Group	Not Disabled	Disabled	All	Not Disabled	Disabled	All	Not Disabled	Disabled	All
All	83.0	40.2	78.2	83.3	43.5	78.6	80.2	41.1	75.0
Gender									
Male	88.2	45.2	83.3	88.4	47.6	83.5	86.6	45.5	81.2
Female	78.2	35.6	73.3	78.5	39.6	73.9	74.1	36.9	69.0
Race/Ethnic Group									
White	83.6	41.7	79.0	83.9	44.8	79.3	81.6	42.3	76.3
Black	81.1	41.8	75.8	80.4	37.4	74.6	78.2	33.8	70.6
Asian	78.2	45.6	75.9	78.5	48.6	76.4	74.5	43.0	72.2
Hispanic	80.2	25.9	71.0	80.0	33.3	73.4	76.8	41.8	73.1
Mixed	86.8	48.9	80.0	84.5	42.7	75.6	81.4	45.0	73.6
Other	83.4	38.3	79.1	83.2	39.9	76.0	76.9	41.7	70.0
Age									
16-19	61.0	48.7	60.1	64.0	48.9	63.0	54.6	42.4	53.8
20-24	87.9	67.6	86.7	88.6	71.7	87.5	85.2	65.1	83.9
25-34	90.0	56.1	88.0	90.5	59.8	88.6	87.9	61.5	86.2
35-44	89.9	50.9	86.7	90.0	54.4	87.0	88.9	55.0	85.7
45-54	91.9	46.8	86.8	92.2	50.4	87.0	89.8	49.0	83.8
55-64	80.7	36.5	72.4	80.6	40.1	72.9	75.3	35.8	66.3
65-74	32.9	16.1	28.2	33.9	17.8	29.4	31.5	15.2	26.1
Educational Attainment									
<12 or 12, No Diploma	63.1	27.0	54.8	65.2	29.2	57.2	62.3	27.4	54.8
High School Diploma	81.4	37.4	75.1	82.4	42.0	76.4	79.8	40.4	73.8
Some College	86.7	47.8	82.6	87.1	51.9	83.3	85.0	50.7	80.9
Bachelor's Degree	87.6	58.4	86.0	87.6	59.1	85.9	86.4	56.3	84.4
Master's or Higher Degree	88.9	59.2	87.5	88.4	60.3	86.9	87.8	57.7	85.8
Nativity Status									
Foreign-Born	80.2	31.4	74.6	79.7	35.5	74.9	76.0	40.4	72.7
Native-Born	83.7	42.3	79.0	83.9	44.8	79.2	81.0	41.1	75.4

Source: U.S. Census Bureau, 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by CLMS.

Chart 10:
Percent of 16-74 Year Old Disabled Persons in Massachusetts and the U.S. Who Were Employed at Some Time During 2003-2004 by Educational Attainment



As was the case for E/P ratios, the incidence of employment among the disabled was highest for 20-24 year olds at 67.6% then fell steadily with age, declining to 36% for those 55-64 and to a low of 16% for those 65-74 years old. The age patterns of employment rates for the disabled in New England and the U.S. were identical to those of Massachusetts. Across race-ethnic groups, the incidence of employment ranged from a low of 26 percent for Hispanics to highs of 46-49 percent among Asians and persons of mixed race. The Hispanic disabled in Massachusetts were considerably less likely to be working than their U.S. counterparts (26% vs. 42%). In contrast, the Black disabled in Massachusetts were more likely to be working than their U.S. counterparts (42% vs. 34%).

The percent of the disabled in Massachusetts who were employed at some point during the year rose steadily and strongly with their years of school completed (Table 10 and Chart 10). The employment rate of the disabled who did not graduate from high school was only 27 percent, it rose to 37 percent for high school graduates, and to 58-59 percent for those holding a Bachelor's or more advanced degree. Members of the latter two educational groups were more than twice as likely to be employed as high school dropouts in our state, the New England region, and the U.S.

Similar to our findings for E/P ratios, the native born, disabled in Massachusetts were more likely than the foreign born to have worked at some point during the year (42% vs. 31%). This eleven percentage point employment differential was statistically significant at the .01 level. In contrast to findings for Massachusetts, the employment rates of foreign born disabled in the U.S. was statistically identical to that of the native born with the two groups having employment rates in the 40 to 41 percent range.

The Annual Weeks and Weekly Hours of Work Among Employed Disabled Persons in Massachusetts, New England, and the U.S.: 2003-2004

Data on the number of weeks worked during an entire year by employed persons also were collected by the ACS survey.[28] The responses of all employed 16-74 year olds to this question on weeks worked were used to estimate the mean weeks of employment during the year by all of the employed, the disabled, and the non-disabled in Massachusetts, New England, and the U.S. during 2003 and 2004 (Table 11). Mean weeks of employment also were estimated for gender, age, race-ethnic, educational attainment, and nativity subgroups of disabled and non-disabled workers.

Mean weeks of employment for all disabled workers in Massachusetts were 39.4, which was statistically identical to the mean weeks of employment for their disabled counterparts across the country in 2003-2004 (Table 11). The average disabled worker was employed for nearly 40 weeks. There was very little variation in mean weeks of employment among gender, race-ethnic, or nativity subgroups with nearly all of these means falling in the 39 to 40 week range. There, however, was greater variability in mean weeks worked across age and educational attainment subgroups of the disabled in Massachusetts as well as New England and the U.S. (Table 11). Teenagers worked the fewest number of weeks (23) during the year followed by 20-24 year olds at 35 weeks. The employed members of each of the other age groups worked, on average, for 39 to 41 weeks. Mean weeks worked by the disabled in Massachusetts ranged from a low of 33.6 among high school dropouts to highs of 43 weeks among those disabled persons holding a Bachelor's or higher academic degree (Table 11 and Chart 11).

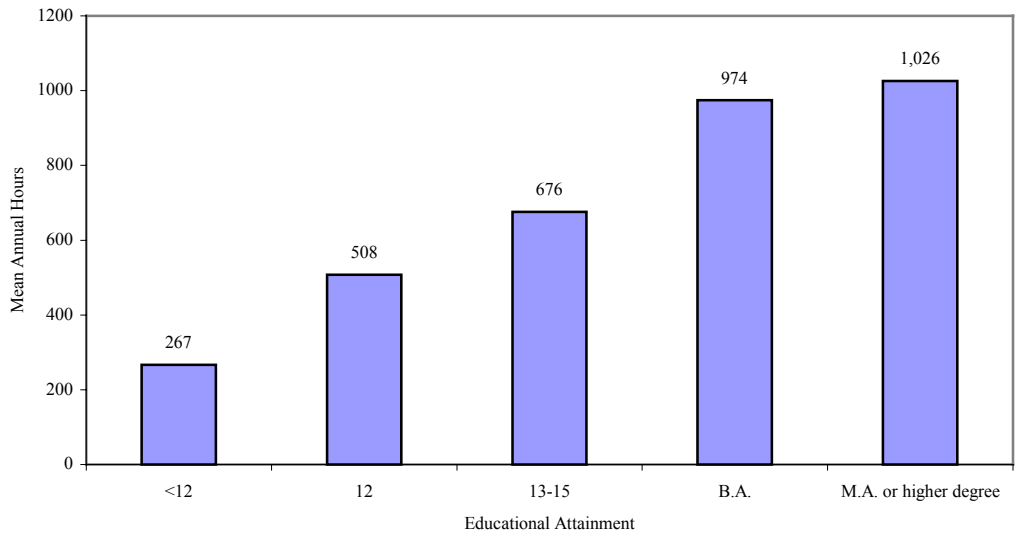
[28] The weeks worked by employed respondents included weeks of paid vacation, paid sick leave, and military service. The reporting period is the 12 months immediately prior to the week the questionnaire was completed.

Table 11:
Mean Weeks Worked by Employed Disabled and Non-Disabled 16-74 Year Olds During 2003-2004 in Massachusetts, New England, and the U.S., by Selected Demographic Traits, 2003-2004 Averages

	Massachusetts			New England			**U.S.**		
Group	Not Disabled	Disabled	All	Not Disabled	Disabled	All	Not Disabled	Disabled	All
All	45.3	39.4	44.9	45.2	39.9	44.9	44.8	39.8	44.4
Gender									
Male	46.1	39.2	45.6	46.0	40.0	45.6	45.7	40.4	45.3
Female	44.4	39.5	44.2	44.4	39.8	44.1	43.8	39.2	43.5
Race/Ethnic Group									
White	45.5	39.6	45.1	45.4	40.1	45.1	45.1	40.0	44.7
Black	45.3	39.2	45.0	44.4	37.2	43.9	43.7	38.6	43.3
Asian	44.3	40.2	44.1	44.4	42.0	44.3	44.9	41.6	44.7
Hispanic	44.4	39.8	44.1	43.9	37.8	43.5	44.3	39.8	44.0
Mixed	43.4	33.7	42.8	42.9	39.4	42.5	42.4	38.2	41.9
Other	42.9	38.5	42.6	43.0	39.2	42.7	42.7	37.5	42.1
Age									
16-19	26.2	23.0	26.0	26.3	22.5	26.1	26.8	22.7	26.6
20-24	39.0	35.4	38.8	39.1	35.5	38.9	39.9	35.0	39.7
25-34	46.4	38.5	46.1	46.5	40.0	46.2	45.8	39.3	45.5
35-44	47.2	41.3	46.9	47.4	40.9	47.1	47.1	40.8	46.7
45-54	48.0	41.6	47.6	48.0	42.0	47.5	47.6	42.1	47.2
55-64	46.9	40.5	46.3	46.8	41.6	46.2	46.2	41.8	45.7
65-74	42.3	39.1	41.8	41.5	39.0	41.0	41.0	38.2	40.4
Educational Attainment									
<12 or 12, No Diploma	38.2	33.6	37.7	37.6	35.3	37.3	39.2	36.1	38.8
High School Diploma	45.8	39.4	45.4	45.9	39.8	45.4	45.1	40.0	44.7
Some College	45.2	40.2	44.9	45.4	40.9	45.1	45.3	40.7	44.9
Bachelor's Degree	46.5	43.1	46.4	46.6	42.9	46.4	46.5	42.3	46.3
Master's or Higher Degree	46.8	42.7	46.7	46.8	42.1	46.7	46.7	42.3	46.5
Nativity Status									
Foreign-Born	45.3	40.1	45.1	45.4	40.2	45.1	45.2	41.1	45.0
Native-Born	45.3	39.2	44.9	45.2	39.8	44.8	44.7	39.7	44.3

Source: U.S. Census Bureau, 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by CLMS.

Chart 11:
Expected Mean Annual Hours of Work Among 16-74 Year Old Disabled Persons in Massachusetts by Educational Attainment, 2003-2004 Averages



Mean weekly hours of work also varied fairly considerably across educational subgroups in Massachusetts. Disabled workers lacking a high school diploma or a GED certificate worked for slightly under 30 hours per week versus nearly 35 hours for high school graduates, 39 hours for B.A. degree recipients, and nearly 41 hours among those with an M.A. or higher degree. Across every measure of employment (E/P ratios, the incidence of employment during the year, mean weeks of employment, and mean weekly hours of work) there were very large gaps among the disabled in Massachusetts by their educational attainment. By combining the findings for three of these measures (the incidence of employment, mean weeks worked, and mean hours per week), we can derive estimates of actual mean annual hours of work of the disabled by educational attainment in Massachusetts.[29] These estimates include persons with no paid employment during the year. Expected mean annual hours of work of the disabled during 2003-2004 by educational attainment varied from a low of 267 hours among those lacking a regular high school diploma/GED certificate, to 508 for high school graduates, and to a maximum of 1,026 hours for those disabled persons with a Master's or higher degree (Chart 11). The best educated members of the disabled population worked four times as many hours as their least

[29] These mean expected annual hours of work were derived by multiplying the percent of the disabled in each educational subgroup with some employment during the year by mean weeks of work among the employed and then by mean weekly hours of work among the employed.

educated peers. These substantial variations in annual work hours had major impacts on their expected annual earnings, family incomes, and income inadequacy status.

Estimating Labor Underutilization Problems Among the Disabled Population in Massachusetts

While the ACS surveys provide a comprehensive set of observations on the disabled population and their labor force status at the time of the surveys, they only capture information on one labor market problem; i.e., unemployment at the time of the survey. The problems of underemployment (working fewer than desired full-time hours), mal-employment (working in jobs that do not fully utilize one's education or training), or hidden unemployment (wanting work but not actively looking) cannot be captured with the ACS data. The CPS survey can help capture such information, but the CPS only collects detailed information on the disabled at the time of the March CPS survey. The CPS also utilizes a different definition of the disabled than the ACS survey. A 16-74 year old respondent to the March CPS survey would be classified as disabled if he or she met any one of the following seven conditions:

- Indicated that they had a disability that either prevented them from working or limited the amount of work they could do[30]
- Were classified as not in the labor force at the time of the March CPS survey due to the existence of a disability
- Did not work at any time in the prior calendar year due to an illness / disability
- Retired from or left their most recent job due to health reasons
- Received disability payments last year from the Veterans administration
- Was under 65 years of age and received cash payments under the Supplemental Security Income (SSI) program during the previous year
- Was under 65 and received Medicare benefits

The number and percent of 16-74 year old residents of the U.S., Massachusetts, and each of the other New England states that met the above disability criteria are displayed in Table . For

[30] Four of every five of the individuals that met the above "disability" definition answered yes to this question in the March CPS survey in either 2004 or 2005.

the March 2004 – March 2005 period, there were 23.5 million persons ages 16-74 in the U.S. who would have been classified as disabled. They represented 11.3% of all 16-74 year old residents of the nation's civilian, non-institutional population. In Massachusetts, we estimate that slightly over 488,000 individuals or 10.5% of all 16-74 year old residents would have been classified as disabled. In the other five New England states, the percent of the 16-74 year old population that was classified as disabled ranged from a low of 8.6% in New Hampshire to 15.7% in Maine. Massachusetts ranked second lowest among the New England state in the share of its population that was classified as disabled in March 2004-2005.

Table 12:
Number of 16-74 Year Old Persons and Per Cent of the 16-74 Year Old Population Who Were Classified as Disabled in the U.S., Massachusetts, and the Other New England States, March 2004-2005

Geographic Area	(A) Number of Persons Classified as Disabled	(B) Per Cent of All 16-74 Year Old Residents
U.S.	23,480,202	11.3
Massachusetts	488,553	10.5
Connecticut	281,643	11.3
Maine	148,964	15.7
New Hampshire	80,309	8.6
Rhode Island	86,415	11.3
Vermont	56,605	12.3

Source: March 2004 and March 2005 CPS surveys, public use files, tabulations by authors.

The monthly labor force questionnaires for the March surveys of 2004 and 2005 allow us to identify the labor force status of each "disabled" person at the time of the survey as well as those who experienced any one of the following three labor market problems:

- Those who were unemployed at the time of each survey.
- Those who were working part-time (less than 35 hours per week) for economic reasons, e.g., reduced hours at the job during the reference week or an inability to find a job offering full-time hours
- Wanted a job at the time of the survey but was not actively looking for work. This group of individuals will be referred to as the labor force reserve. They are

completely jobless and desirous of employment but are not counted as unemployed in the CPS survey because they do not meet the active job search test.[31]

In Table 13, estimates are provided of the pool of the unemployed, the underemployed, and the labor force reserve among the 16-74 year old disabled population of Massachusetts, New England and the U.S. in March 2004 – March 2005. In our state, the number of unemployed, disabled persons was estimated to be 11,600, yielding an unemployment rate of 11.5%. Approximately 3,000 other disabled individual were underemployed, and 12,500 were members of the labor force reserve. The combined pool of underutilized, disabled individuals was slightly over 27,000, yielding an underutilization rate of 24%. This underutilization rate is calculated by dividing the combined pool of underutilized persons by the adjusted civilian labor force of the state.[32] The underutilization rates of the disabled in New England and the U.S. were even higher at 28% and 31.5%, respectively.

[31] The CPS questionnaire also collects information from the labor force reserve on whether they had looked for a job in the last 12 months, whether they were available for work at the time of the survey, and their main reason for not actively looking for work. Those individuals who had looked for work in the past 12 months and were available for work in the reference week of the survey are classified by the U.S. Bureau of Labor Statistics as the marginally attached labor force.

[32] The adjusted civilian labor force is equal to the sum of the civilian labor force and the labor force reserve.

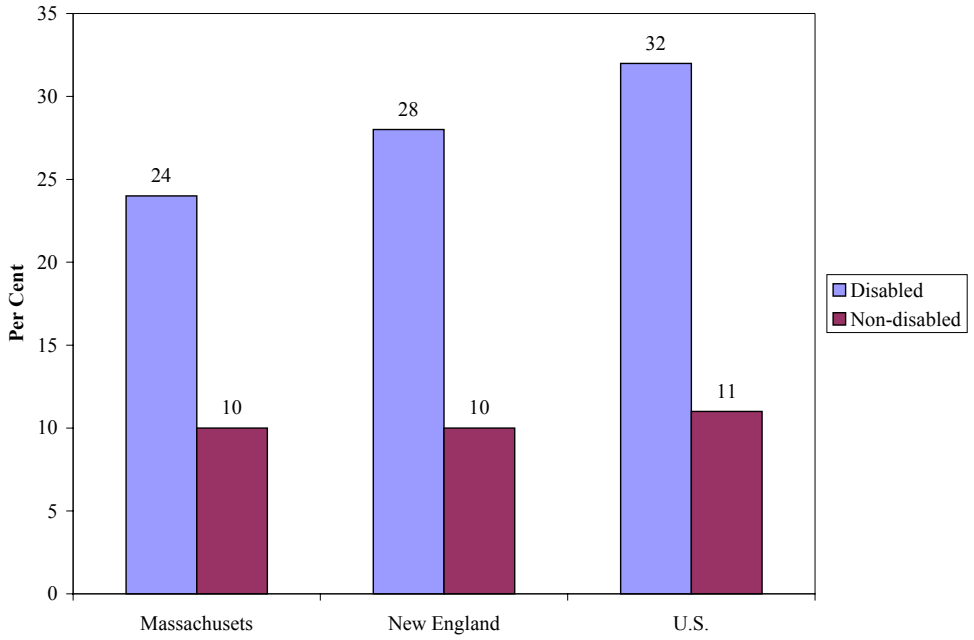
Table 13:
The Incidence of Labor Market Problems Among Disabled 16-74 Year Olds
in Massachusetts, New England, and the U.S., 2004-2005 Averages

	(A)
Massachusetts	Disabled
Civilian Labor Force	100,682
Employed	89,091
Unemployed	11,592
Not in Labor Force	387,870
Total, 16-74 Disabled	488,552
Underemployed	2,940
Labor Force Reserve	12,532
Underutilized Pool	27,063
Adjusted Labor Force	113,214
Unemployment Rate	11.5%
Underutilization Rate	23.9%
New England	Disabled
Civilian Labor Force	256,752
Employed	225,497
Unemployed	31,255
Not in Labor Force	885,423
Total, 16-74 Disabled	1,142,175
Underemployed	10,752
Labor Force Reserve	41,811
Underutilized Pool	83,819
Adjusted Labor Force	298,563
Unemployment Rate	12.2%
Underutilization Rate	28.1%
U.S.	Disabled
Civilian Labor Force	5,357,752
Employed	4,583,968
Unemployed	773,785
Not in Labor Force	18,106,818
Total, 16-74 Disabled	23,464,570
Underemployed	269,656
Labor Force Reserve	937,651
Underutilized Pool	1,981,092
Adjusted Labor Force	6,295,403
Unemployment Rate	14.4%
Underutilization Rate	31.5%

Source: 2004 and 2005 March CPS Supplements, U.S. Census Bureau and U.S. BLS, tabulations by CLMS.

Both the incidence of unemployment and underutilization problems among the disabled in Massachusetts over the past two years were considerably higher than the incidence of such problems among the non-disabled in our state. The unemployment rate among the disabled population was twice as high as that of the non-disabled (11.5% vs. 5.6%) while the underutilization rate of 24% was approximately 2.4 times as high as that of the non-disabled (Chart 12). The underutilization rates of the disabled in New England and the U.S. were nearly three times higher than those of the non-disabled in these two areas over the same time period (Chart 12).

Chart 12:
Underutilization Rates of the 16-74 Year Old Disabled and Non-Disabled Population of Massachusetts, New England, and the U.S.: March 2004 – March 2005 (in %)



Efforts to successfully attract the disabled members of the labor force reserve into the ranks of the employed would help boost the size of the labor force in Massachusetts. Over the past three years, the Massachusetts labor force has declined, the only state in the nation to experience such a reduction. Training such workers for current shortage occupations would help expand employment and alleviate labor shortages, boosting real output and income growth.

The Characteristics of the Jobs Held by Disabled Workers in Massachusetts and the U.S., 2003-2004

The above sections have reviewed findings on the employment rates and recent employment experiences of the disabled, but they did not tell us about the characteristics of the jobs obtained by disabled workers in the Commonwealth. What types of jobs do disabled workers hold and how do they differ, if at all, from those held by workers without any disability in Massachusetts, New England and the U.S.? To identify the types of jobs held by 16-74 year old disabled workers, we analyzed data from the 2003 and 2004 American Community Surveys with respect to three sets of job characteristics: their class of worker status, the industrial sectors of their jobs, and the major occupational categories of their jobs and compared these findings to those of non-disabled workers.

The class of worker categories include the following four: private sector wage and salary worker, public sector wage and salary worker, self-employed, and work without pay in a family owned business. Findings of an analysis of the class of worker status of the disabled revealed that 73 out of 100 disabled workers' jobs in Massachusetts were private sector, wage and salary positions. The share of disabled in private sector wage and salary position was nearly 4 percentage points lower than that of their peers without any disability (73% versus 77%). These findings are consistent with the class of worker status of jobs held by the disabled in the New England region and the U.S. (Table 14).

Disabled workers in Massachusetts were slightly more likely to be employed in government jobs than their peers without any disability (15% versus 13%); however, in New England and the U.S., the shares of disabled and non-disabled with government job was nearly identical. In Massachusetts, nearly 11 percent of the disabled reported themselves to be self-employed during 2003-2004 compared to 10 percent of non-disabled workers. The share of disabled workers in Massachusetts who were self-employed was modestly below that of their peers in New England and the U.S. Fewer than one percent of the disabled worked without pay in a family owned business.

Table 14:
Percentage Distribution of Disabled Workers in Massachusetts, New England and the U.S. in the U.S., by Class of Worker Status, 2003-2004(Averages)

Class of Worker Status	(A) All	(B) Disabled	(C) Not Disabled
Massachusetts			
Private Wage and Salary	76.6	73.5	76.8
Government	13.1	14.8	13.1
Self-Employed	10.0	11.1	10.0
Without Pay	0.2	0.6	0.2
Total	100.0	100.0	100.0
New England			
Private Wage and Salary	75.4	73.0	75.6
Government	13.5	14.3	13.5
Self-Employed	10.9	12.0	10.8
Without Pay	0.2	0.6	0.2
Total	100.0	100.0	100.0
U.S.			
Private Wage and Salary	74.2	71.6	74.4
Government	15.0	15.9	15.0
Self-Employed	10.5	12.0	10.4
Without Pay	0.3	0.5	0.3
Total	100.0	100.0	100.0

Source: 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by authors.

The ACS survey also collected information on the industries of the firms in which workers were currently employed. While the U.S. Census Bureau classifies jobs into 290 individual industries based on the North American Industrial Classification System (NAICS), we collapsed these industries into 21 major industrial sectors. The percentage shares of all workers, disabled workers and non-disabled workers within each of these industrial sectors in Massachusetts are displayed in Table 15. During 2003-2004, the healthcare and social service industry was the largest single employer of the disabled, accounting for 17% of disabled workers, a share which was nearly 2-percentage points higher than the share of non-disabled workers. The share of disabled workers employed in retail trade industries in Massachusetts (the second largest employer of disabled) was nearly 14% compared to only 10% for non-disabled workers. This share was nearly identical with that for disabled workers in the New England region and the U.S. In contrast to our expectations, the share of disabled workers who were employed in construction industries in Massachusetts was 6.5%, and was exactly identical to the

share of non-disabled workers in this industry. Similar findings held true for both New England and the U.S. In manufacturing industries, the share of disabled workers also was identical with that of non-disabled workers (11%). In finance/insurance and professional, scientific and technical industries, disabled workers were under represented compared to their non-disabled counterparts. Overall, the shares of disabled workers in most major industries were nearly identical to those of non-disabled workers in Massachusetts.

Table 15:
The Distribution of 16-74 Year Old Persons by Major Industrial Category and Disability Status, Massachusetts, 2003-2004

Industry	(A) All	(B) Disabled	(C) Not Disabled
Agriculture, Forestry, Fishing, and Hunting	0.4%	0.3%	0.4%
Mining	0.0%	0.1%	0.0%
Utilities	0.7%	0.6%	0.7%
Construction	6.2%	6.5%	6.2%
Non-Durable Manufacturing	3.7%	2.7%	3.8%
Durable Manufacturing	7.4%	8.7%	7.4%
Wholesale Trade	3.4%	3.5%	3.3%
Retail Trade	10.5%	13.9%	10.3%
Transportation and Warehousing	3.3%	3.0%	3.3%
Information	2.8%	1.9%	2.8%
Finance and Insurance	6.7%	4.4%	6.9%
Real Estate, Rental and Leasing	1.9%	1.9%	1.9%
Professional, Scientific and Technical	8.5%	5.7%	8.6%
Management	0.2%	0.1%	0.2%
Administrative Support and Waste Management	3.2%	3.6%	3.2%
Educational	10.4%	9.0%	10.4%
Healthcare and Social Services	14.7%	16.9%	14.6%
Arts, Entertainment and Recreation	1.6%	1.6%	1.6%
Accommodation and Food Services	5.7%	5.8%	5.7%
Other Services	4.5%	4.8%	4.5%
Public Administration	4.0%	5.1%	4.0%
Total	100.0%	100.0%	100.0%

Source: 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by authors.

We also examined the occupational characteristics of the jobs held by all workers, disabled workers and non-disabled workers in Massachusetts during 2003-2004. Jobs were

assigned to nearly 480 individual occupations by the U.S. Census Bureau. We have combined them into 22 major occupational groups for our analysis. At the time of the ACS survey, office and administrative support occupations accounted for the largest share of job held by disabled in our state. Fifteen percent of 16-74 year old disabled workers in Massachusetts held jobs in office and administrative support occupations compared to 13% of non-disabled workers. (Table 16). Sales and related occupations employed 11% of disabled workers in the state, and this share was identical with that of non-disabled workers. Nearly 8% of disabled workers in Massachusetts were employed in blue collar/production occupations compared to only 4% of non-disabled workers. Disabled workers in Massachusetts were under represented in management, computer and mathematical occupations. Only 10% of disabled workers were employed in such occupations versus nearly 14% of non-disabled workers. Another occupational sector where disabled workers in Massachusetts were under represented was healthcare practitioner and technical occupations (3% versus 6%). These findings for Massachusetts were consistent with the findings for the New England region and the U.S. (See Appendix C).

Nearly one-quarter of disabled workers in Massachusetts were employed in blue collar occupations, such as farming, forestry, fishing, construction, extraction, installation, maintenance, repair, production, transportation and material moving. The share of non-disabled workers in these same occupations in Massachusetts was only 18%. The share of disabled workers in New England holding blue-collar occupations in 2003-2004 was identical with Massachusetts's share, but for the entire U.S., their share was even higher at 28%. State workforce development policymakers should be aware of these occupational development. Over the past 15 years, labor market research on worker dislocation has revealed that workers in the blue-collar occupation are at greater risk of displacement than their peers in any other occupations and their re-employment rates tend to be low.[33] The state's disabled workforce may, thus, be at greater risk of displacement in coming years; thus, programs to assist them in becoming re-employed may well be needed to keep them active in the labor market.

[33] See: (i) Duane Leigh, Assisting Workers Displaced by Structural Change, An International Perspective, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, 1995. (ii) Peter B. Doeringer et. el. "Labor Displacement in the United States" Chapter 3, Turbuance in the American Workplace, Oxford University Press, New York, 1991

Table 16:
The Distribution of the Employed 16-74 Year Old by Major Occupational Category, Massachusetts, 2003-2004

Occupation	All	Disabled	Not Disabled
Management Occupations	10.5%	8.0%	10.6%
Business and Financial Operations Occupations	5.4%	3.8%	5.5%
Computer and Mathematical Occupations	3.6%	1.8%	3.7%
Architecture and Engineering Occupations	2.3%	2.0%	2.3%
Life, Physical, and Social Science Occupations	1.9%	1.2%	2.0%
Community and Social Services Occupations	1.8%	2.5%	1.7%
Legal Occupations	1.6%	0.6%	1.6%
Education, Training, and Library Occupations	6.6%	6.5%	6.6%
Arts, Design, Entertainment, Sports, and Media Occupations	2.1%	1.3%	2.2%
Healthcare Practitioner and Technical Occupations	5.8%	3.3%	5.9%
Healthcare Support Occupations	2.4%	3.4%	2.3%
Protective Service Occupations	2.1%	2.0%	2.1%
Food Preparation and Serving Occupations	4.5%	5.7%	4.4%
Building and Grounds Cleaning Occupations	3.5%	5.0%	3.4%
Personal Care and Service Occupations	3.1%	3.2%	3.1%
Sales and Related Occupations	10.6%	10.7%	10.6%
Office and Administrative Support Occupations	13.9%	14.9%	13.8%
Farming, Fishing, and Forestry Occupations	0.3%	0.4%	0.3%
Construction and Extraction Occupations	5.1%	5.7%	5.0%
Installations, Maintenance, and Repair Occupations	3.0%	4.1%	2.9%
Production Occupations	5.7%	7.9%	5.6%
Transportation and Material Moving Occupations	4.3%	6.0%	4.2%
Total	100.0%	100.0%	100.0%

Source: 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by authors.

Mean Annual Earnings of 16-74 Year Old Full-Time/Year-Round Disabled Workers, 2002-2003

One of the most important measures of the economic well-being of workers is their annual earnings from employment. The 2003 and 2004 ACS surveys collected information from each employed respondent on their earnings from wage and salary employment and self-employment in the twelve month period prior to the survey. Since annual earnings depend critically on one's weeks of employment during the year and average hours worked per week, we have restricted our analysis to those persons who were employed nearly full-year, full-time. The definition of a full-time, full-year worker in this paper is a person who was employed for 40 or

more weeks for 35 or more hours per week.[34] Weeks of employment include weeks of paid vacation, sick leave, and military service. Our estimates of average annual earnings are mean earnings, which represent the weighted arithmetic average of all employed persons meeting our weeks and hours criteria.

We have combined the annual earnings data from the 2003 and 2004 ACS surveys to calculate weighted annual averages for this two year period.[35] Mean annual earnings estimates of the disabled and the non-disabled were generated for Massachusetts, the entire New England region, and the nation. In a separate analysis, we calculated the mean annual earnings of the disabled in each of the 50 states and the District of Columbia and used these findings to identify the rank of Massachusetts among the 50 states and the D.C. with respect to the mean annual earnings of the disabled during 2002 and 2003.

How well did disabled workers fare in terms of their annual earnings from employment during the past few years? Did full-time, year-round disabled workers in Massachusetts earn less than their peers without a disability? If so, how much less did they earn? By how much did the annual earnings of full-time year-round disabled workers vary by gender, race-ethnicity, and educational attainment? How did the annual earnings of Massachusetts workers with disabilities compare to those of their peers in other states in the U.S.? The following section will explore these issues in depth. The mean annual earnings of 16-74 year old, full-time year-round workers in Massachusetts during 2002-2003 was $43,272, which was $13,000 or 23% less than the annual earnings of workers without a disability (Table 17). These differences in mean annual earnings between disabled workers and non-disabled workers were not unique to Massachusetts. Similar relative-sized differences prevailed in the New England region and the U.S. .

The mean annual earnings of $43,272 for full-time, year-round disabled workers in Massachusetts ranked 4th highest among the 50 states and the District of Columbia on this measure and exceeded the mean for the U.S. by $6,000. The three states with the highest annual mean earnings for disabled workers were the District of Columbia, Connecticut and New Jersey. The five states with the lowest mean annual earnings for full time, year-round disabled workers

[34] The U.S. Census Bureau adopts a somewhat more rigorous definition of a full-time, year-round worker. Their definition requires that a person be employed for 50 or more weeks during the year. This definition would exclude many teachers and construction workers who lose some weeks of employment during the year to summer vacations, bad weather, or seasonal layoffs.

[35] We did not adjust the annual earnings data from the 2003 ACS surveys to account for the moderately lower prices that prevailed during that year in both in both the Greater Boston area and the nation.

were Mississippi, Arkansas, West Virginia, Montana and South Dakota. The mean annual earnings for full time, year-round workers in these states ranged between $35,000 and $36,000 during 2002-2003.

Table 17:
Mean Annual Earnings of 16-74 Year Old Full-Time/Year-Round Workers by Disability Status in Massachusetts, New England and the U.S., 2002-2003 Averages

Geographic Area	Disabled (A)	Not Disabled (B)	Absolute Difference (A-B)	Relative Difference (A/B)/A
Massachusetts	$43,272	$56,159	-$12,887	-22.9%
New England	$40,337	$53,797	-$13,460	-25.0%
U.S.	$37,227	$46,001	-$8,774	-19.1%
Massachusetts Ranking Among 49 States and the District of Columbia	4th Highest	4th Highest		

Source: 2003 and 2004 American Community Surveys (ACS), public use files, tabulations by authors.

Estimates of the mean annual earnings of disabled workers in Massachusetts in selected gender, race-ethnic, age, educational attainment, and nativity subgroups are displayed in Table 18. In Massachusetts, during 2002-2003, full time year-round disabled male workers had mean annual earnings that were nearly $16,000 higher than those of their female counterparts ($49,756 versus $33,865). (Table 18). This difference in mean annual earnings between disabled men and women workers in Massachusetts was partly attributable to more hours of work among men with disabilities as well as to differences in occupational job attachment that are associated with differences in pay. Similar sized differences in earnings between disabled male and female workers also prevailed in both the New England region and the U.S. during 2002-2003. Both disabled male and female workers in Massachusetts earned 23% less than their peers who were not disabled. Among major race-ethnic groups, the mean annual earnings of disabled workers in Massachusetts during 2002-2003 ranged from lows of $29,000 to $31,000 among Blacks and Hispanics to a high of $45,000 among Whites. Among workers in the seven age groups, the mean annual earnings of workers with some type of disability ranged from a low of $19,000 among 16-19 years old and a high of $56,000 among 65-74 years old. In contrast to the findings for the New England region and the U.S., 20-24 year old full time, year-round workers in Massachusetts earned 15% to 21% more than their peers who were not disabled. Among

disabled workers in the 25-74 year old age group, the mean annual earnings were 14% to 28% less than their peers who were not disabled.

Similar to the findings for all workers, the mean annual earnings of disabled workers were positively and strongly linked with their years of schooling completed. During 2002-2003, disabled full-time, year-round workers lacking a high school diploma or GED in Massachusetts earned only $30,730 while disabled workers with a high school diploma or a GED earned $33,592. Those workers with post-secondary schooling fared considerably better. Those with 1-3 years of college earned $39,544, disabled workers with a Bachelor's degree earned $58,000 and those with a Master's or higher degree earned $68,373. The mean of the earnings level of disabled workers with a Master's or higher degree was more than twice as high as those with only a high school diploma. Those disabled workers without a high school diploma earned only 7% less than their peers who were not disabled. Disabled workers with a high school diploma, 1-3 years of college, and a Bachelor's degree typically earned 13% to 14% less than their peers who were not disabled.

There was a substantial annual earnings difference between native-born and foreign-born disabled workers in Massachusetts partly reflecting differences in their educational attainment and English-speaking skills. As noted earlier, the foreign-born disabled also were much less likely to work than their native-born counterparts. Foreign-born disabled workers earned nearly $12,000 less than their native-born counterparts did ($33,376 versus $45,171) and earned 29% less than non-disabled foreign-born.

Table 18:
Mean Annual Earnings of 16-74 Year Old Full-Time/Year-Round Workers by Disability Status and Selected Demographic/Human Capital Traits in Massachusetts, 2002-2003 Averages

Group	(A) Disabled	(B) Not Disabled	(C) Absolute Difference (A-B)	(D) Relative Difference (A/B)-A
Gender				
Male	$49,756	$64,615	-$14,859	-23.0%
Female	$33,865	$44,179	-$10,314	-23.3%
Race-Ethnicity				
White	$45,947	$58,708	-$12,761	-21.7%
Black	$30,730	$41,124	-$10,394	-25.3%
Asian	$33,639	$62,202	-$28,563	-45.9%
Hispanic	$29,169	$33,622	-$4,453	-13.2%
Mixed	$28,506	$44,499	-$15,994	-35.9%
Other	$54,077	$36,347	$17,730	48.8%
Age Group				
16-19	$19,203	$16,660	$2,543	15.3%
20-24	$32,216	$26,538	$5,678	21.4%
25-34	$32,881	$45,771	-$12,890	-28.2%
35-44	$47,339	$62,368	-$15,029	-24.1%
45-54	$44,442	$64,275	-$19,833	-30.9%
55-64	$43,936	$59,877	-$15,941	-26.6%
65-74	$55,814	$65,289	-$9,476	-14.5%
Educational Attainment				
<12 or 12, No HS Diploma	$30,437	$32,802	-$2,365	-7.2%
High School Diploma	$33,592	$39,303	-$5,711	-14.5%
Some College	$39,344	$45,069	-$5,726	-12.7%
Bachelor's Degree	$57,839	$66,210	-$8,371	-12.6%
Master's or Higher Degree	$68,373	$89,535	-$21,162	-23.6%
Nativity Status				
Foreign-Born	$33,376	$47,225	-$13,850	-29.3%
Native-Born	$45,171	$58,213	-$13,042	-22.4%

Source: 2003 and 2004 American Community Surveys (ACS), U.S. Census Bureau, tabulations by authors.

Determinant of the Annual Earnings of 16-74 Year Old Disabled Persons in Massachusetts Who Worked Full-Time, Year-Round in 2003: Findings of A Multivariate Statistical Analysis

Knowledge of the factors influencing the annual earnings of disabled workers is important in formulating future educational and workforce development policies for the disabled. To improve our knowledge base in this area, we examined the determinants of the annual

earnings of disabled workers in Massachusetts and the U.S. during 2003. Our major objective was to estimate the independent influence of years of schooling, marital status, work experience, and the industries and occupations of the jobs held by the disabled on their expected annual earnings. How does an additional year of schooling or work experience influence the expected earnings of the disabled? Does employment in particular industries or occupation increase their expected earnings? Our analysis is focused on those 16-74 year old disabled workers who worked full-time, year-round in Massachusetts, i.e., 40 or more weeks for 35 hours or more hours per week. We constructed a set of multivariate statistical models utilizing core elements of human capital earnings theory.[36] In these models, the dependent variable is the natural log of the annual earnings of 16-74 year old employed disabled persons during calendar year 2003. The predictor variables include the gender, race, marital status, years of schooling, years of potential work experience, and annual hours worked. A listing of all dependent and independent variables appearing in the earnings function is displayed in Table 19. More detailed definitions of these variables appear in the appendix. Separate earnings regression models were estimated for all disabled workers combined and for men and women separately.

[36] For a review of the key theoretical underpinnings of human capital earnings functions, see: (i) Jacob Mincer, Schooling, Experience, and Earnings, National Bureau of Economic Research, New York, 1974; (ii) Solomon W. Polachek and W. Stanley Siebert, The Economics of Earnings, Cambridge University Press, Cambridge, 1993.

Table 19:
A Listing of the Dependent and Independent Variables Appearing in the Regression Models of the Annual Earnings of 16-74 Year Old Disabled Persons in Massachusetts Who Worked Full-Time, Year-Round in 2003

Dependent Variable:	The natural log of the annual earnings of 16-74 year old disabled persons who worked full-time, year-round during 2003.
Independent variables:	Race-ethnic origin (5) Potential years of work experience (1) Years of potential work experience squared (1) Educational attainment (5) Marital status (2) Nativity status (2) Total annual hours worked Occupations (22) Industry of employment (19)

Note: The number of individual variables appearing in the regression model for each category of independent variables is displayed in brackets. For example, there are five individual educational attainment variables. The base educational group for the regression model consists of high school graduates with no years of completed post-secondary schooling.

Findings of the first multiple regression model of the annual earnings of the combined pool of 16-74 year old disabled persons revealed that, similar to findings for all workers, formal schooling, race-ethnicity, marital status, work experience, and annual hours of work typically had large independent effects on the expected annual earnings of disabled workers.[37] The estimated percentage point impacts in Table 20 were calculated by taking the anti-log of the estimated coefficients in the earnings function. Disabled male workers earned, ceteris paribus, 31% more than their female counterparts did. The earnings of disabled Black workers were 18% less that those of their White, non-Hispanic counterparts, and Hispanic male workers earned 41% less than their peers who were White. This latter finding for Massachusetts was unique compared to the finding for Hispanics in the nation who earned only 10% less than their White counterparts.

[37] The first regression model excluded the variables representing the industry and occupation of the jobs held by the employed during the calendar year.

In the combined earnings model, those disabled workers in Massachusetts with some college earned 18% more than their peers with only a regular high school diploma or a GED certificate, the base group for the model. Those with a Bachelor's degree, ceteris paribus, obtained annual earnings that were 63% higher than those of high school graduates, and disabled workers with a Master's or higher degree earned 82% more than high school graduates. Foreign-born 16-74 year old disabled workers in Massachusetts, ceteris paribus, earned 22% less than their native-born peers.

Additional years of potential work experience also had large payoffs on the earnings for the combined group of disabled workers, with each of the early years of work experience adding about 3.5% more to their annual earnings, and 10 years of work experience raising expected annual earnings by approximately 20 per cent, holding all other variables constant. The earnings effects of greater work experience do not reach a maximum until nearly 20 years of work experience are reached.[38]

The estimated impacts of most of above predictors on the annual earnings of 16-74 year old disabled workers in Massachusetts were quite strong for both men and women. Those men who had completed 1-3 years of college obtained significantly higher annual earnings (16%) than their peers with only a high school diploma; however, the coefficient of this same variable for women, while of similar magnitude, was not quite statistically significant. The estimated earnings impact of a bachelor's degree for disabled male workers was 80% but only 31% for disabled women. Disabled male and female workers with a Master's or a higher degree earned, 88% and 64%, respectively, more than their peers with only a high school diploma or its equivalent. Work experience had a significant positive effects on the annual earnings of both men and women. All of the coefficients for the educational attainment variables, except 1-12 years of school, in the combined regression model were statistically significant. (Table 20).

[38] The true earnings impacts of actual work experience as opposed to potential work experience are likely even larger than this, given earlier research findings of studies using actual years of work experience. The ACS database does not provide data on actual years of work experience.

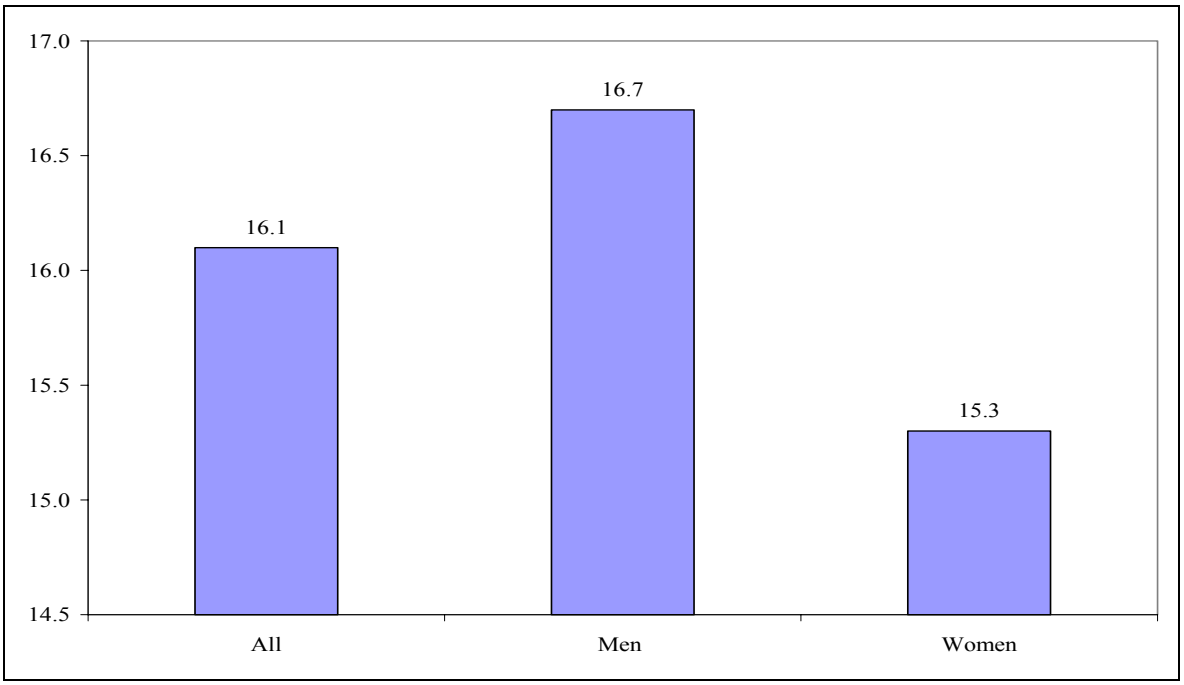
Table 20:
Estimated Impacts of Gender, Race-Ethnicity, Work Experience, Educational Attainment, Marital Status, and Nativity Status Variables on the Expected Annual Earnings of 16-74 Years Old Disabled Workers in Massachusetts Who Worked Full-Time Year-Round, 2003 (In Percentage Points)

Variable	All	Men	Women
(Constant)	$13,791***	$15,817***	$16,826***
Male	.307***		
Black	-.178*	-.212	-.163
Asian	-.046	-.120	-.203
Hispanic	-.091	-.406**	.119
Mixed Race	.022	-.058	-.116
1-12 Years of Schooling	.022	.025	.056
1-3 Years of College	.183**	.158*	.164
Bachelor's Degree	.630***	.802***	.310**
Masters or Higher Degree	.817***	.884***	.640***
Foreign Born	-.224***	-.109	-.181*
Married	.046	.089	-.054
Experience	.035***	.043***	.025**
Experience Squared	-.001***	-.001***	.000*
Annual Hours	.0001*	0.000	.000

*** significant at .01 level
** significant at .05 level
* significant at .10 level

A similar earnings regression model was estimated for the disabled in the U.S. We also included in our earnings function for disabled workers in the U.S. a dummy variable for a worker in Massachusetts to test whether disabled workers in Massachusetts earned more than their peers in other states, ceteris paribus. The findings revealed that, for all disabled workers and for men and women separately, disabled workers residing in Massachusetts obtained significantly higher annual earnings than their peers in the other states. (Chart 13). All of the estimated coefficients on the variable for Massachusetts were statistically very significant. The earnings of all disabled workers in Massachusetts and those for disabled men and women separately were 15% to 17% higher than their peers in other states.

Chart 13:
Predicted Earnings Coefficient for the Massachusetts Variable in the Earnings Model for 16-74 Year Old Disabled Workers in Massachusetts and the U.S., 2003 (In %)



Previous national and state research has consistently found that earnings of workers also are significantly influenced by the industry and occupation of their job attachment. Do the annual earnings of the disabled in Massachusetts vary significantly by industry and occupation of employment? To test this hypothesis, we first included a set of 20 occupational variables in our model. The answer is clearly occupation does matter. (Table 21). The base occupational group for our analysis was food service and production workers. For example, full-time, year-round 16-74 year old disabled workers who were employed in management occupations had predicted earnings, ceteris paribus, that were 68% higher than their counterparts in food preparation and production occupations. Those disabled workers employed in business and finance occupations earned 57% more than their peers in food preparation and production occupations. Disabled workers in health and technical occupations had annual earnings that were 79% higher than those of their counterparts in food preparation and production occupation. At the other end of the spectrum, full-time, year-round workers in arts, entertainment, and media occupations and in agriculture, forestry and fishing occupations earned 69% and 59%, respectively, less than their peers who worked in food preparation and production occupations.

Table 21:
Estimated Marginal Impact of Occupation of Job Attachment on the Earnings of 16-74 Year Old Disabled Full-Time Year-Round Workers in Massachusetts, 2003

Occupation	Marginal Impact
Health and Technical Occupation	0.790**
Management Occupation	0.685***
Business and Finance Occupation	0.570**
Construction Occupation	0.190
Installation, Maintenance and Repair Occupation	0.169
Legal, Professional, and Social Science Occupation	0.161
Protective Service Occupation	0.113
Education and Library Occupation	0.079
Computer and Math Occupation	0.077
Health Support Occupation	0.073
Sales Occupation	-0.012
Office Administration Support Occupation	-0.018
Engineering Occupations	-0.022
Transportation	-0.085
Community and Social Service Occupation	-0.137
Legal Occupation	-0.178
Personal Service Occupation	-0.204
Cleaning Occupation	-0.217
Agriculture, Forestry, and Fishing Occupation	-0.595**
Arts, Entertainment, and Media Occupation	-0.695***

*** significant at .01 level
** significant at .05 level
* significant at .10 level
Note: Base group is food preparation and production workers.

The annual earnings of 16-74 years old disabled full-time, year-round workers in Massachusetts also varied significantly by industry of employment. However, only eight of the 18 coefficients on industry of employment were statistically significant. The base group for the analysis was comprised of workers in retail trade industries. Those disabled year-round, full-time workers in the construction industry earned 27% more than their peers in the retail trade industry. Disabled workers employed in the Wholesale trade industry earned 53% more than their peers who worked in the retail trade industry during 2003. Disabled workers in Massachusetts in finance/ insurance, education, and public service industries also earned 52%-64% more than their peers who worked in the retail trade industry. (Table 22).

Table 22:
Estimated Marginal Impacts of Industry of Job Attachment on the Annual Earnings of 16-74 Year Old Disabled Full-Time Year-Round Workers in Massachusetts by Industry, 2003

Industry	Coefficient
Public Service	0.637**
Finance and Insurance	0.560**
Wholesale	0.533**
Healthcare and Social	0.522***
Utilities	0.487
Information	0.483*
Construction	0.270*
Non-Durable Manufacturing	0.217
Durable Manufacturing	0.213*
Administrative Support and Waste Management	0.206
Educational	0.196
Professional, Scientific and Technology	0.194
Other Services	0.190
Accommodation and Food Service	0.166
Transportation and Warehousing	0.124
Real Estate, Rental and Leasing	0.046
Agriculture, Forestry, Fishing and Hunting	-0.488
Arts, Entertainment and Recreation	-0.643***

*** significant at .01 level
** significant at .05 level
* significant at .10 level
Note: Base group is the retail trade industry

Predicting the Expected Annual Earnings of Selected Groups of 16-74 Year Old Disabled Full-Time, Year-Round Workers in Massachusetts, 2003

The above findings of the earnings regression models also can be used to predict the expected annual earnings for full-time year-round disabled workers in Massachusetts with given demographic traits, years of schooling, and cumulative work experience. We have selected five hypothetical, 16-74 year old disabled male workers with varying human capital traits to illustrate the range in their expected annual earnings in 2003. The traits of each of these five disabled workers are displayed in Table 23. The predicted annual earnings of the first individual (a male disabled worker, White, high school graduate, 10 years of work experience) was $24,605. Let us simply change the educational background of this worker to an Associate's degree. A disabled male worker with an Associate degree who worked full-time, year-round during 2003 and had 10 years of cumulative work experience was expected to earn $28,469. At the upper end of the

educational distribution, the same disabled male worker with a Bachelor's degree who worked full-time, year-round and had 10 years of work experience was expected to earn $39,251 or $15,000 more than his counterpart with only a high school diploma. Similarly, a disabled male worker with a Master's degree who worked full-time, year-round during 2003 and had 10 years of work experience was expected to earn $43,735 or nearly two times as much as our first individual. These findings clearly indicate that additional years of formal schooling had large significant impacts on the expected annual earnings of 16-74 year old disabled workers in Massachusetts. Additional schooling has very high rate of return for disabled workers in Massachusetts. At the other extreme, a Hispanic disabled male worker who was foreign-born, had no high school diploma or GED, worked full-time, year-round, and had 10 years of work experience had expected earnings of only $17,431 during 2003.

Table 23:
Predicted Earnings of a Hypothetical Set of 16-74 Year Old Disabled Male Workers in Massachusetts, 2003

Disabled Worker Characteristics	Predicted Earnings
Earnings of a disabled person who worked full-time year-round, White high school graduate, married, and with 10 years of work experience	$24,605
A disabled male worker with an Associate degree, who worked full-time year-round , and had 10 years of work experience	$28,469
A disabled male worker with a Bachelor's degree, who worked full-time, year-round during 2003, and had 10 years of work experience	$39,251
A disabled male worker with a Master's degree, who worked full-time, year-round during 2003 and had 10 years of work experience	$43,735
A disabled foreign-born Hispanic male worker without a high school diploma who worked full-time, year-round during 2003 and had 10 years of work experience	$17,431

Implications of the Above Findings for Future Education and Workforce Development Policies for the Disabled in the State

In 2003-2004, there were approximately 509,000 disabled individuals 16-74 years old residing in households within the state of Massachusetts.[39] This group of disabled adults was equivalent to slightly more than 11% of the state's population in the 16-74 age group. Only 36 percent of this group, however, were actively participating in the civilian labor force of the state in 2003-2004, a rate of participation slightly below the U.S. average despite the fact that the disabled in Massachusetts were somewhat better educated than their U.S. counterparts.[40] The disabled labor force in Massachusetts faced a very high rate of unemployment (between 15% and 16%) in 2003-2004 that reduced their overall employment rate and likely discouraged a number of the disabled from actively seeking work. Approximately 30% of the state's disabled were employed during an average month in 2003-2004, but the state's employment rate ranked only 38th highest among the 50 states. There is a sizable pool of unemployed, underemployed, and hidden unemployed disabled persons in Massachusetts and the U.S. Strategies to boost their employability can help achieve a number of important labor market goals for the state.

The labor force participation rates, employment rates, hours of work, and annual earnings of the disabled often varied considerably across race-ethnic, educational attainment, and nativity status subgroups. Those disabled adults with no high school diploma, Hispanics, older adults (55-74), and immigrants typically fared far more poorly in the labor market than each of their respective counterparts in the state and across the country. The more years of formal schooling the disabled had completed, the more favorable were their outcomes on a wide array of labor market measures, especially annual hours of work and annual earnings. Part of the explanation for the poorer labor market outcomes for Hispanics and immigrants was related to their weaker educational attainment and their limited English-speaking skills. Other national research has shown that the literacy and numeracy proficiencies of the disabled significantly influence their degree of attachment to the labor force and their earnings from employment.[41] Findings in this research report also revealed that the labor force participation rates and employment rates of the

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[39] Data from the ACS surveys that were used to generate these estimates exclude all persons living in group quarters and institutions, such as jails, prisons, long-stay hospitals, and nursing homes.

[40] In 2003-2004, only 28% of the adult disabled in Massachusetts lacked a high school diploma versus 30% in the U.S. In our state, nearly 16 percent of the disabled had a Bachelor's or higher degree versus only 12% of their counterparts across the country. See: Andrew Sum, Ishwar Khatiwada, et. al., The Adult Disabled Population (16-74) in Massachusetts, pp. 7-9.

[41] See: Kevin Hollenbeck and Jean Kimmel, The Returns to Education and Basic Skills Training ….

disabled tend to decline sharply with age, particularly after age 45 and 55. Given the current and forthcoming aging of the Massachusetts population, these findings have a number of potential adverse consequences for the future growth of the state's labor force and the costs of the state's health care and disability systems.

There are a variety of strategies that the state can pursue to boost the future labor force attachment, employability, and earnings of the state's disabled adult population. First, the adult basic education, community college, and WIA workforce development systems can expand services to the disabled population in need of remedial education services to boost their literacy, numeracy, and writing skills and acquire GED's and associate degrees. Second, additional monies to provide occupational training to the disabled population should be allocated to the vocational rehabilitation system and to other actors in the workforce development system. Third, the WIA-funded one stop career centers should assign a higher priority to the counseling and job placement of the disabled. Careful studies of best practices in placing the disabled in jobs should be carried out, and findings of such evaluations should be widely disseminated throughout the state. Fourth, private sector firms and government agencies should make more good faith efforts to hire the disabled, and tax incentives for hiring and retraining the disabled should be promoted. Fifth, more systematic evaluation of the effectiveness of the Ticket to Work Act in promoting employment opportunities for the disabled should be undertaken. Sixth, the very weak employment records of Hispanic disabled adults and of other immigrant disabled adults should be addressed by state policymakers and program administrators in the income transfer, vocational rehabilitation, and workforce development systems.

Appendix A: Employment to Population Ratios of 16-74 Year Old Disabled Workers by State

In the main body of this paper, we presented and assessed findings from the ACS surveys on the employment rates of disabled 16-74 year old adults in Massachusetts, New England, and the U.S. The ACS survey data also can be used to estimate E/P ratios for the disabled adult population 16-74 years old in each state and the District of Columbia in 2003 and 2004. By generating estimates of the E/P ratios for the disabled in each state, we can identify the ranking of each state along the distribution of E/P ratios for the disabled, both in the aggregate and for a number of gender and educational subgroups.

The following tables display the number of employed disabled workers and their E/P ratios by state during the 2003-2004 period. The number of employed, E/P ratios, and the states' rankings on employment-population ratios are presented for all disabled workers, for men and women separately, and for five educational subgroups.

Table A-1: State Ranking on Employment-Population Ratio of All 16-74 Year Old Disabled Person, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.257	151,099	1	Wyoming	0.441
Alaska	0.434	29,659	2	South Dakota	0.434
Arizona	0.310	157,328	3	Alaska	0.434
Arkansas	0.288	113,484	4	Minnesota	0.425
California	0.311	903,997	5	North Dakota	0.418
Colorado	0.383	132,682	6	Utah	0.412
Connecticut	0.368	90,732	7	Vermont	0.406
Delaware	0.350	27,716	8	Nebraska	0.404
Dist of Columbia	0.306	15,480	9	Colorado	0.383
Florida	0.300	482,846	10	Idaho	0.380
Georgia	0.286	235,555	11	New Hampshire	0.379
Hawaii	0.326	31,520	12	Iowa	0.376
Idaho	0.380	54,856	13	Montana	0.376
Illinois	0.318	297,814	14	Wisconsin	0.374
Indiana	0.355	217,738	15	Kansas	0.368
Iowa	0.376	98,236	16	Connecticut	0.368
Kansas	0.368	88,678	17	Maryland	0.356
Kentucky	0.241	144,626	18	Indiana	0.355
Louisiana	0.267	136,537	19	Washington	0.351
Maine	0.338	53,408	20	Delaware	0.350
Maryland	0.356	166,700	21	Oregon	0.340
Massachusetts	0.304	154,899	22	Oklahoma	0.340
Michigan	0.306	301,804	23	Maine	0.338
Minnesota	0.425	157,845	24	Nevada	0.333
Mississippi	0.264	109,506	25	Missouri	0.330
Missouri	0.330	192,212	26	Rhode Island	0.328
Montana	0.376	37,366	27	Hawaii	0.326
Nebraska	0.404	64,844	28	New Jersey	0.326
Nevada	0.333	64,052	29	Virginia	0.325
New Hampshire	0.379	42,849	30	Texas	0.325
New Jersey	0.326	207,125	31	New Mexico	0.321
New Mexico	0.321	68,429	32	Illinois	0.318
New York	0.283	465,830	33	Ohio	0.314
North Carolina	0.283	257,801	34	California	0.311
North Dakota	0.418	22,923	35	Arizona	0.310
Ohio	0.314	360,752	36	Dist of Columbia	0.306
Oklahoma	0.340	143,335	37	Michigan	0.306
Oregon	0.340	127,806	**38**	**Massachusetts**	**0.304**
Pennsylvania	0.296	355,194	39	Florida	0.300
Rhode Island	0.328	33,061	40	Pennsylvania	0.296
South Carolina	0.280	131,890	41	Tennessee	0.289
South Dakota	0.434	25,618	42	Arkansas	0.288

Tennessee	0.289	202,103	43	Georgia	0.286
Texas	0.325	621,648	44	North Carolina	0.283
Utah	0.412	69,388	45	New York	0.283
Vermont	0.406	26,259	46	South Carolina	0.280
Virginia	0.325	216,320	47	Louisiana	0.267
Washington	0.351	213,773	48	Mississippi	0.264
West Virginia	0.200	60,276	49	Alabama	0.257
Wisconsin	0.374	178,674	50	Kentucky	0.241
Wyoming	0.441	22,825	51	West Virginia	0.200
U.S. Total	0.314	8,567,085			

Table A-2: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled Men, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.294	83,306	1	Wyoming	0.503
Alaska	0.475	16,390	2	Utah	0.479
Arizona	0.342	85,023	3	North Dakota	0.476
Arkansas	0.340	65,102	4	Alaska	0.475
California	0.354	489,359	5	South Dakota	0.470
Colorado	0.434	76,601	6	Minnesota	0.467
Connecticut	0.384	46,141	7	Colorado	0.434
Delaware	0.359	13,131	8	Vermont	0.433
Dist of Columbia	0.331	6,904	9	Nebraska	0.428
Florida	0.335	261,788	10	New Hampshire	0.427
Georgia	0.326	128,481	11	Idaho	0.419
Hawaii	0.365	18,586	12	Wisconsin	0.416
Idaho	0.419	31,020	13	Iowa	0.416
Illinois	0.366	162,768	14	Kansas	0.411
Indiana	0.405	122,028	15	Indiana	0.405
Iowa	0.416	56,804	16	Montana	0.405
Kansas	0.411	48,694	17	Washington	0.390
Kentucky	0.269	79,115	18	Missouri	0.386
Louisiana	0.305	77,717	19	Connecticut	0.384
Maine	0.377	30,398	20	Oklahoma	0.378
Maryland	0.368	81,843	21	Maine	0.377
Massachusetts	0.341	83,510	22	Oregon	0.377
Michigan	0.333	156,558	23	Texas	0.373
Minnesota	0.467	85,447	24	Maryland	0.368
Mississippi	0.314	61,174	25	Nevada	0.367
Missouri	0.386	110,091	26	Illinois	0.366
Montana	0.405	21,130	27	Hawaii	0.365
Nebraska	0.428	35,624	28	New Jersey	0.365
Nevada	0.367	36,152	29	Virginia	0.361
New Hampshire	0.427	23,557	30	Delaware	0.359

New Jersey	0.365	107,757	31	California	0.354
New Mexico	0.326	34,568	32	Rhode Island	0.352
New York	0.314	241,857	33	Arizona	0.342
North Carolina	0.308	131,146	**34**	**Massachusetts**	**0.341**
North Dakota	0.476	13,082	35	Arkansas	0.340
Ohio	0.333	183,099	36	Tennessee	0.336
Oklahoma	0.378	77,655	37	Florida	0.335
Oregon	0.377	71,329	38	Michigan	0.333
Pennsylvania	0.327	188,860	39	Ohio	0.333
Rhode Island	0.352	17,175	40	Dist of Columbia	0.331
South Carolina	0.322	71,839	41	Pennsylvania	0.327
South Dakota	0.470	14,523	42	Georgia	0.326
Tennessee	0.336	110,136	43	New Mexico	0.326
Texas	0.373	342,941	44	South Carolina	0.322
Utah	0.479	39,834	45	Mississippi	0.314
Vermont	0.433	14,395	46	New York	0.314
Virginia	0.361	113,039	47	North Carolina	0.308
Washington	0.390	118,651	48	Louisiana	0.305
West Virginia	0.208	31,356	49	Alabama	0.294
Wisconsin	0.416	98,155	50	Kentucky	0.269
Wyoming	0.503	13,234	51	West Virginia	0.208
U.S. Total	0.352	4,629,063			

Table A-3: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled Women, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.223	67,793	1	South Dakota	0.395
Alaska	0.392	13,269	2	Alaska	0.392
Arizona	0.279	72,305	3	Minnesota	0.385
Arkansas	0.239	48,382	4	Nebraska	0.378
California	0.273	414,638	5	Vermont	0.378
Colorado	0.330	56,081	6	Wyoming	0.376
Connecticut	0.353	44,591	7	North Dakota	0.361
Delaware	0.341	14,585	8	Connecticut	0.353
Dist of Columbia	0.289	8,577	9	Utah	0.346
Florida	0.266	221,058	10	Maryland	0.345
Georgia	0.249	107,075	11	Montana	0.343
Hawaii	0.282	12,934	12	Delaware	0.341
Idaho	0.339	23,836	13	Idaho	0.339
Illinois	0.274	135,046	14	New Hampshire	0.333
Indiana	0.307	95,710	15	Iowa	0.332
Iowa	0.332	41,432	16	Wisconsin	0.332
Kansas	0.326	39,984	17	Colorado	0.330
Kentucky	0.214	65,511	18	Kansas	0.326

Louisiana	0.229	58,820	19	New Mexico	0.316
Maine	0.298	23,010	20	Washington	0.312
Maryland	0.345	84,857	21	Indiana	0.307
Massachusetts	0.270	71,388	22	Rhode Island	0.306
Michigan	0.282	145,246	23	Oklahoma	0.303
Minnesota	0.385	72,399	24	Oregon	0.302
Mississippi	0.219	48,332	25	Maine	0.298
Missouri	0.277	82,121	26	Nevada	0.297
Montana	0.343	16,236	27	Ohio	0.296
Nebraska	0.378	29,221	28	Virginia	0.294
Nevada	0.297	27,900	29	New Jersey	0.291
New Hampshire	0.333	19,292	30	Dist of Columbia	0.289
New Jersey	0.291	99,368	31	Hawaii	0.282
New Mexico	0.316	33,861	32	Michigan	0.282
New York	0.256	223,973	33	Texas	0.280
North Carolina	0.262	126,655	34	Arizona	0.279
North Dakota	0.361	9,841	35	Missouri	0.277
Ohio	0.296	177,653	36	Illinois	0.274
Oklahoma	0.303	65,680	37	California	0.273
Oregon	0.302	56,477	**38**	**Massachusetts**	**0.270**
Pennsylvania	0.268	166,335	39	Pennsylvania	0.268
Rhode Island	0.306	15,886	40	Florida	0.266
South Carolina	0.242	60,051	41	North Carolina	0.262
South Dakota	0.395	11,096	42	New York	0.256
Tennessee	0.247	91,968	43	Georgia	0.249
Texas	0.280	278,708	44	Tennessee	0.247
Utah	0.346	29,554	45	South Carolina	0.242
Vermont	0.378	11,864	46	Arkansas	0.239
Virginia	0.294	103,281	47	Louisiana	0.229
Washington	0.312	95,122	48	Alabama	0.223
West Virginia	0.191	28,920	49	Mississippi	0.219
Wisconsin	0.332	80,518	50	Kentucky	0.214
Wyoming	0.376	9,591	51	West Virginia	0.191
U.S. Total	0.279	3,938,022			

Table A-4: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled With 1-12 Years of Schooling, No High School Diploma, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.142	31,755	1	Wyoming	0.301
Alaska	0.262	3,693	2	North Dakota	0.298
Arizona	0.198	27,532	3	Utah	0.298
Arkansas	0.201	26,360	4	South Dakota	0.298
California	0.204	173,813	5	Colorado	0.289
Colorado	0.289	24,044	6	Idaho	0.283

Connecticut	0.202	11,782	7	Minnesota	0.279
Delaware	0.223	4,869	8	Wisconsin	0.264
Dist of Columbia	0.163	2,895	9	New Hampshire	0.263
Florida	0.193	85,507	10	Alaska	0.262
Georgia	0.181	54,056	11	Nebraska	0.255
Hawaii	0.244	4,755	12	Montana	0.252
Idaho	0.283	8,545	13	Nevada	0.250
Illinois	0.171	43,739	14	Hawaii	0.244
Indiana	0.238	45,064	15	Indiana	0.238
Iowa	0.232	13,197	16	Iowa	0.232
Kansas	0.226	12,908	17	New Mexico	0.231
Kentucky	0.130	32,560	18	Kansas	0.226
Louisiana	0.154	29,573	19	Delaware	0.223
Maine	0.193	7,304	20	Vermont	0.221
Maryland	0.219	28,690	21	Maryland	0.219
Massachusetts	0.169	24,198	22	Rhode Island	0.217
Michigan	0.171	45,384	23	Missouri	0.215
Minnesota	0.279	19,822	24	Oregon	0.215
Mississippi	0.175	28,932	25	Washington	0.211
Missouri	0.215	33,617	26	Texas	0.208
Montana	0.252	5,091	27	California	0.204
Nebraska	0.255	8,767	28	Connecticut	0.202
Nevada	0.250	11,546	29	Arkansas	0.201
New Hampshire	0.263	7,344	30	Arizona	0.198
New Jersey	0.187	33,491	31	Oklahoma	0.195
New Mexico	0.231	15,295	32	Florida	0.193
New York	0.162	82,013	33	Maine	0.193
North Carolina	0.176	56,726	34	New Jersey	0.187
North Dakota	0.298	3,801	35	Ohio	0.186
Ohio	0.186	64,606	36	South Carolina	0.184
Oklahoma	0.195	22,119	37	Virginia	0.181
Oregon	0.215	17,396	38	Georgia	0.181
Pennsylvania	0.155	51,224	39	Tennessee	0.177
Rhode Island	0.217	6,994	40	North Carolina	0.176
South Carolina	0.184	31,734	41	Mississippi	0.175
South Dakota	0.298	3,863	42	Michigan	0.171
Tennessee	0.177	43,586	43	Illinois	0.171
Texas	0.208	135,868	**44**	**Massachusetts**	**0.169**
Utah	0.298	10,622	45	Dist of Columbia	0.163
Vermont	0.221	3,739	46	New York	0.162
Virginia	0.181	40,269	47	Pennsylvania	0.155
Washington	0.211	25,503	48	Louisiana	0.154
West Virginia	0.088	9,823	49	Alabama	0.142
Wisconsin	0.264	30,569	50	Kentucky	0.130
Wyoming	0.301	3,073	51	West Virginia	0.088
U.S. Total	0.190	1,549,644			

Table A-5: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled With High School Diploma or Equivalent, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.273	50,435	1	Wyoming	0.437
Alaska	0.428	9,771	2	South Dakota	0.431
Arizona	0.323	46,883	3	Alaska	0.428
Arkansas	0.313	44,202	4	Vermont	0.424
California	0.286	207,026	5	Utah	0.407
Colorado	0.325	32,189	6	Minnesota	0.404
Connecticut	0.370	32,228	7	Nebraska	0.387
Delaware	0.319	9,476	8	New Hampshire	0.386
Dist of Columbia	0.273	3,668	9	North Dakota	0.377
Florida	0.296	151,455	10	Connecticut	0.370
Georgia	0.283	77,255	11	Indiana	0.366
Hawaii	0.301	10,731	12	Wisconsin	0.357
Idaho	0.343	17,091	13	Montana	0.356
Illinois	0.303	93,598	14	Iowa	0.356
Indiana	0.366	84,098	15	Kansas	0.354
Iowa	0.356	39,260	16	Oklahoma	0.349
Kansas	0.354	31,055	17	Idaho	0.343
Kentucky	0.280	55,873	18	Virginia	0.342
Louisiana	0.270	44,621	19	Maryland	0.333
Maine	0.320	20,736	20	Colorado	0.325
Maryland	0.333	51,095	21	Arizona	0.323
Massachusetts	0.287	48,167	22	Texas	0.320
Michigan	0.316	110,056	23	Maine	0.320
Minnesota	0.404	53,942	24	Delaware	0.319
Mississippi	0.272	35,444	25	Michigan	0.316
Missouri	0.312	69,309	26	Washington	0.315
Montana	0.356	13,486	27	Ohio	0.314
Nebraska	0.387	23,880	28	Arkansas	0.313
Nevada	0.309	19,566	29	Rhode Island	0.313
New Hampshire	0.386	15,445	30	Missouri	0.312
New Jersey	0.299	68,075	31	Oregon	0.311
New Mexico	0.275	16,764	32	Nevada	0.309
New York	0.271	148,134	33	Illinois	0.303
North Carolina	0.273	80,214	34	Pennsylvania	0.301
North Dakota	0.377	6,831	35	Hawaii	0.301
Ohio	0.314	140,062	36	Tennessee	0.300
Oklahoma	0.349	51,269	37	New Jersey	0.299
Oregon	0.311	36,184	38	Florida	0.296
Pennsylvania	0.301	150,464	**39**	**Massachusetts**	**0.287**
Rhode Island	0.313	10,828	40	California	0.286
South Carolina	0.279	43,298	41	Georgia	0.283
South Dakota	0.431	9,226	42	Kentucky	0.280

Tennessee	0.300	73,588	43	South Carolina	0.279
Texas	0.320	181,283	44	New Mexico	0.275
Utah	0.407	20,821	45	North Carolina	0.273
Vermont	0.424	10,578	46	Dist of Columbia	0.273
Virginia	0.342	68,849	47	Alabama	0.273
Washington	0.315	57,066	48	Mississippi	0.272
West Virginia	0.231	28,274	49	New York	0.271
Wisconsin	0.357	62,923	50	Louisiana	0.270
Wyoming	0.437	8,605	51	West Virginia	0.231
U.S. Total	0.308	2,775,365			

Table A-6: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled With 1-3 Years of College, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.382	48,607	1	Vermont	0.515
Alaska	0.504	10,813	2	Wyoming	0.504
Arizona	0.358	56,538	3	Alaska	0.504
Arkansas	0.314	28,550	4	South Dakota	0.501
California	0.369	329,058	5	North Dakota	0.495
Colorado	0.439	44,647	6	Minnesota	0.493
Connecticut	0.430	25,558	7	Iowa	0.481
Delaware	0.419	7,282	8	Nebraska	0.475
Dist of Columbia	0.410	4,474	9	Utah	0.472
Florida	0.362	157,154	10	New Jersey	0.441
Georgia	0.385	63,684	11	Rhode Island	0.441
Hawaii	0.347	8,924	12	Maryland	0.440
Idaho	0.432	20,505	13	Montana	0.440
Illinois	0.409	106,099	14	Colorado	0.439
Indiana	0.421	58,743	15	Wisconsin	0.434
Iowa	0.481	32,865	16	Kansas	0.434
Kansas	0.434	29,026	17	Idaho	0.432
Kentucky	0.334	36,972	18	Connecticut	0.430
Louisiana	0.363	37,446	19	Maine	0.423
Maine	0.423	14,553	20	Indiana	0.421
Maryland	0.440	47,495	21	Delaware	0.419
Massachusetts	0.376	44,444	22	New Hampshire	0.417
Michigan	0.380	105,379	23	Oklahoma	0.415
Minnesota	0.493	57,982	24	Ohio	0.413
Mississippi	0.362	31,572	25	Dist of Columbia	0.410
Missouri	0.402	58,598	26	Illinois	0.409
Montana	0.440	12,739	27	Washington	0.409
Nebraska	0.475	22,166	28	Texas	0.409
Nevada	0.395	25,034	29	North Carolina	0.404
New Hampshire	0.417	12,075	30	Missouri	0.402

New Jersey	0.441	56,757	31	Oregon	0.397
New Mexico	0.390	22,076	32	Nevada	0.395
New York	0.367	136,537	33	Tennessee	0.392
North Carolina	0.404	84,276	34	Virginia	0.390
North Dakota	0.495	8,400	35	New Mexico	0.390
Ohio	0.413	104,523	36	South Carolina	0.389
Oklahoma	0.415	48,174	37	Pennsylvania	0.388
Oregon	0.397	50,512	38	Georgia	0.385
Pennsylvania	0.388	95,534	39	Alabama	0.382
Rhode Island	0.441	9,642	40	Michigan	0.380
South Carolina	0.389	39,029	**41**	**Massachusetts**	**0.376**
South Dakota	0.501	8,603	42	California	0.369
Tennessee	0.392	57,590	43	New York	0.367
Texas	0.409	198,458	44	Louisiana	0.363
Utah	0.472	27,024	45	Mississippi	0.362
Vermont	0.515	6,874	46	Florida	0.362
Virginia	0.390	59,992	47	Arizona	0.358
Washington	0.409	88,310	48	Hawaii	0.347
West Virginia	0.317	15,586	49	Kentucky	0.334
Wisconsin	0.434	58,141	50	West Virginia	0.317
Wyoming	0.504	7,763	51	Arkansas	0.314
U.S. Total	0.395	2,722,772			

Table A-7: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled With a Bachelor's Degree, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.386	13,428	1	Delaware	0.577
Alaska	0.510	3,235	2	North Dakota	0.565
Arizona	0.415	17,832	3	Indiana	0.553
Arkansas	0.489	9,582	4	Wyoming	0.549
California	0.434	122,669	5	Nebraska	0.544
Colorado	0.489	19,493	6	Vermont	0.536
Connecticut	0.504	12,328	7	Wisconsin	0.530
Delaware	0.577	3,831	8	South Dakota	0.527
Dist of Columbia	0.493	2,285	9	Minnesota	0.526
Florida	0.403	56,447	10	Kansas	0.525
Georgia	0.476	24,657	11	Missouri	0.523
Hawaii	0.453	4,497	12	Idaho	0.520
Idaho	0.520	5,910	13	Maine	0.515
Illinois	0.470	32,507	14	Alaska	0.510
Indiana	0.553	18,795	15	Virginia	0.506
Iowa	0.499	8,487	16	Connecticut	0.504
Kansas	0.525	9,846	17	Oregon	0.501

Kentucky	0.442	10,373	18	New Hampshire	0.500
Louisiana	0.478	15,829	19	Iowa	0.499
Maine	0.515	6,922	20	Texas	0.498
Maryland	0.472	19,910	21	Dist of Columbia	0.493
Massachusetts	0.471	24,237	22	Ohio	0.492
Michigan	0.433	26,107	23	Arkansas	0.489
Minnesota	0.526	17,504	24	Colorado	0.489
Mississippi	0.440	9,058	25	New Mexico	0.485
Missouri	0.523	19,182	26	Oklahoma	0.484
Montana	0.447	3,885	27	Louisiana	0.478
Nebraska	0.544	6,409	28	Georgia	0.476
Nevada	0.395	5,376	29	Utah	0.474
New Hampshire	0.500	5,121	30	Maryland	0.472
New Jersey	0.450	29,088	**31**	**Massachusetts**	**0.471**
New Mexico	0.485	8,574	32	Illinois	0.470
New York	0.430	57,598	33	Pennsylvania	0.467
North Carolina	0.405	23,523	34	Hawaii	0.453
North Dakota	0.565	2,836	35	New Jersey	0.450
Ohio	0.492	34,179	36	Montana	0.447
Oklahoma	0.484	15,476	37	Washington	0.444
Oregon	0.501	17,809	38	Kentucky	0.442
Pennsylvania	0.467	36,633	39	Rhode Island	0.440
Rhode Island	0.440	3,368	40	Mississippi	0.440
South Carolina	0.403	11,555	41	Tennessee	0.440
South Dakota	0.527	3,111	42	California	0.434
Tennessee	0.440	17,806	43	Michigan	0.433
Texas	0.498	70,856	44	New York	0.430
Utah	0.474	8,194	45	Arizona	0.415
Vermont	0.536	3,042	46	North Carolina	0.405
Virginia	0.506	26,591	47	South Carolina	0.403
Washington	0.444	26,614	48	Florida	0.403
West Virginia	0.380	4,341	49	Nevada	0.395
Wisconsin	0.530	18,432	50	Alabama	0.386
Wyoming	0.549	2,210	51	West Virginia	0.380
U.S. Total	0.461	957,567			

Table A-8: State Ranking on Employment-Population Ratio of 16-74 Year Old Disabled With a Masters or Higher Degree, 2003-2004 Average

State	E/P Ratio	Number of Employed	Rank	State	E/P Ratio
Alabama	0.421	6,875	1	Delaware	0.615
Alaska	0.585	2,149	2	Nebraska	0.609
Arizona	0.379	8,545	3	Alaska	0.585
Arkansas	0.428	4,790	4	Virginia	0.584

California	0.454	71,432
Colorado	0.530	12,310
Connecticut	0.518	8,837
Delaware	0.615	2,259
Dist of Columbia	0.577	2,159
Florida	0.397	32,283
Georgia	0.479	15,905
Hawaii	0.444	2,613
Idaho	0.498	2,806
Illinois	0.499	21,873
Indiana	0.550	11,039
Iowa	0.514	4,428
Kansas	0.554	5,844
Kentucky	0.514	8,849
Louisiana	0.490	9,069
Maine	0.542	3,895
Maryland	0.579	19,511
Massachusetts	0.494	13,853
Michigan	0.417	14,878
Minnesota	0.540	8,596
Mississippi	0.397	4,501
Missouri	0.539	11,506
Montana	0.569	2,166
Nebraska	0.609	3,624
Nevada	0.419	2,531
New Hampshire	0.477	2,865
New Jersey	0.549	19,714
New Mexico	0.490	5,721
New York	0.488	41,549
North Carolina	0.461	13,063
North Dakota	0.538	1,055
Ohio	0.531	17,383
Oklahoma	0.461	6,298
Oregon	0.371	5,906
Pennsylvania	0.492	21,340
Rhode Island	0.501	2,230
South Carolina	0.437	6,276
South Dakota	0.519	817
Tennessee	0.484	9,534
Texas	0.531	35,184
Utah	0.374	2,728
Vermont	0.542	2,027
Virginia	0.584	20,620
Washington	0.519	16,281
West Virginia	0.302	2,252
Wisconsin	0.499	8,610

5	Maryland	0.579
6	Dist of Columbia	0.577
7	Montana	0.569
8	Kansas	0.554
9	Indiana	0.550
10	New Jersey	0.549
11	Maine	0.542
12	Vermont	0.542
13	Minnesota	0.540
14	Missouri	0.539
15	North Dakota	0.538
16	Texas	0.531
17	Ohio	0.531
18	Colorado	0.530
19	Washington	0.519
20	South Dakota	0.519
21	Connecticut	0.518
22	Kentucky	0.514
23	Iowa	0.514
24	Rhode Island	0.501
25	Wisconsin	0.499
26	Illinois	0.499
27	Idaho	0.498
28	**Massachusetts**	**0.494**
29	Pennsylvania	0.492
30	New Mexico	0.490
31	Louisiana	0.490
32	New York	0.488
33	Tennessee	0.484
34	Georgia	0.479
35	New Hampshire	0.477
36	Wyoming	0.467
37	Oklahoma	0.461
38	North Carolina	0.461
39	California	0.454
40	Hawaii	0.444
41	South Carolina	0.437
42	Arkansas	0.428
43	Alabama	0.421
44	Nevada	0.419
45	Michigan	0.417
46	Mississippi	0.397
47	Florida	0.397
48	Arizona	0.379
49	Utah	0.374
50	Oregon	0.371

Wyoming	0.467	1,175	51	West Virginia	0.302
U.S. Total	0.485	561,737			

Appendix B: The Employment Rates of the 16-64 Year Old Disabled Population Within Each of the Six New England States and the U.S., 2003-2004 Averages

In the main body of this research report, we presented a wide array of findings on the employment rates of the disabled population in Massachusetts, the New England region, and the U.S. Data from the ACS survey also can be used to estimate employment rates for the disabled population in each of the New England states and other states across the nation. In this appendix, we present estimates of the E / P ratios in 2003-2004 for the 16-64 year old disabled population in Massachusetts, the U.S., and each of the other six New England states. Findings are presented for all 16-64 year old disabled persons combined and for men and women separately. In each of the three tables, the New England states are ranked by the size of their E / P ratios from highest to lowest. For each of the three groups (all, men, women), the E / P ratio of the disabled was highest in Vermont and lowest in Massachusetts.

Chart B-1:
Employment to Population Ratios of the Disabled 16-64 Year Old Population, by New England State, 2003-2004 ACS
(in %)

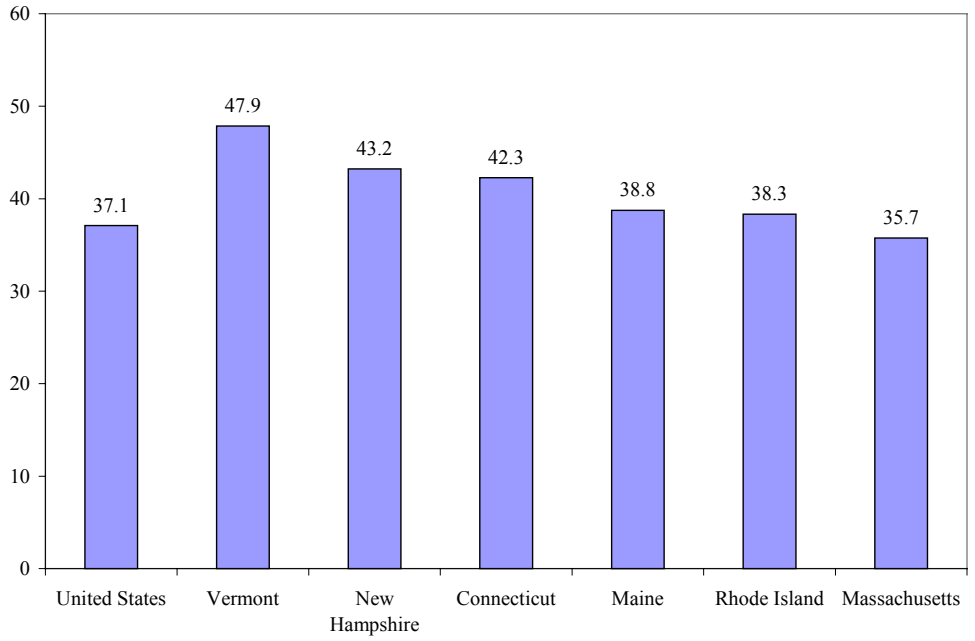


Chart B-2:
Employment to Population Ratios of the Disabled 16-64 Year Old Male Population, by New England State, 2003-2004 ACS
(in %)

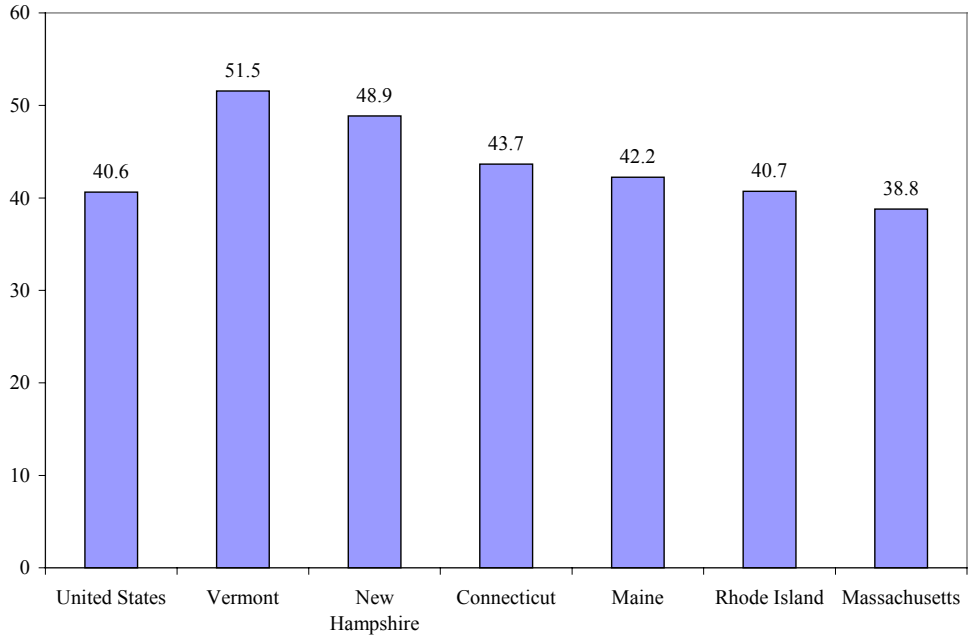
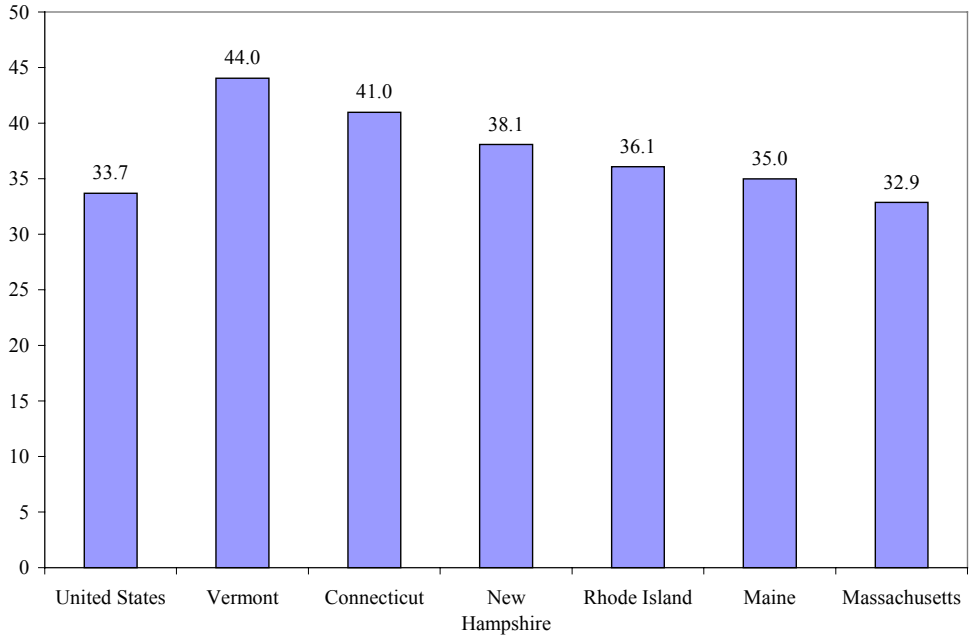


Chart B-3:
Employment to Population Ratios of the Disabled 16-64 Year Old Female Population, by New England State, 2003-2004 ACS
(in %)



Appendix C: Distributions of All Workers, Disabled Workers and Non-Disabled Workers in Massachusetts, New England, and the U.S. by Industry and Occupation, 2003-2004 Averages

The ACS surveys collected information on the industries of the firms in which workers were employed and the occupational characteristics of their jobs. The U.S. Census Bureau has classified jobs into 290 individual industries and nearly 480 occupations. We collapsed industries into 21 major industrial sectors and occupations into 22 major occupational groups. The following Tables C1 to C6 displays the number and percent distribution of all workers, disabled workers, and non-disabled workers by major industries and occupations in Massachusetts, New England and the U.S. during 2003-2004.

Table C-1: Distribution of Employed 16-74 Year Old in Massachusetts by Disability Status and by Industry, 2003-2004

	Number of Employed			Percent Distribution		
Industry	All	Disabled	Not Disabled	All	Disabled	Not Disabled
Agriculture, ,Forestry, Fishing, and Hunting	12,711	473	12,238	0.4%	0.3%	0.4%
Mining	1,257	129	1,129	0.0%	0.1%	0.0%
Utilities	22,335	863	21,473	0.7%	0.6%	0.7%
Construction	192,694	10,029	182,665	6.2%	6.5%	6.2%
Non-Durable Manufacturing	115,434	4,183	111,251	3.7%	2.7%	3.8%
Durable Manufacturing	228,851	13,462	215,389	7.4%	8.7%	7.4%
Wholesale Trade	103,351	5,443	97,908	3.4%	3.5%	3.3%
Retail Trade	324,403	21,475	302,928	10.5%	13.9%	10.3%
Transportation and Warehousing	102,225	4,607	97,619	3.3%	3.0%	3.3%
Information	85,462	2,952	82,511	2.8%	1.9%	2.8%
Finance and Insurance	207,687	6,840	200,847	6.7%	4.4%	6.9%
Real Estate, Rental and Leasing	58,903	2,946	55,958	1.9%	1.9%	1.9%
Professional, Scientific and Technical	260,614	8,893	251,722	8.5%	5.7%	8.6%
Management	5,610	121	5,489	0.2%	0.1%	0.2%
Administrative Support and Waste Management	99,839	5,602	94,237	3.2%	3.6%	3.2%
Educational	319,251	13,922	305,329	10.4%	9.0%	10.4%
Healthcare and Social	454,690	26,254	428,437	14.7%	16.9%	14.6%
Arts, Entertainment and Recreation	48,595	2,413	46,183	1.6%	1.6%	1.6%
Accommodation and Food Services	175,815	9,010	166,806	5.7%	5.8%	5.7%
Other Services	140,183	7,374	132,809	4.5%	4.8%	4.5%
Public Services	124,201	7,913	116,288	4.0%	5.1%	4.0%
Massachusetts Total	3,084,109	154,899	2,929,210	100.0%	100.0%	100.0%

Table C-2: Distribution of Employed 16-74 Year Old in Massachusetts by Disability Status and by Occupation, 2003-2004

	Number of Employed			Percent Distribution		
Occupation	All	Disabled	Not Disabled	All	Disabled	Not Disabled
Management Occupations	322,967	12,344	310,623	10.5%	8.0%	10.6%
Business and Financial Operations Occupations	167,664	5,901	161,763	5.4%	3.8%	5.5%
Computer and Mathematical Occupations	110,881	2,808	108,074	3.6%	1.8%	3.7%
Architecture and Engineering Occupations	70,307	3,037	67,270	2.3%	2.0%	2.3%
Life, Physical, and Social Science Occupations	59,219	1,868	57,352	1.9%	1.2%	2.0%
Community and Social Services Occupations	55,065	3,891	51,174	1.8%	2.5%	1.7%
Legal Occupations	48,582	892	47,691	1.6%	0.6%	1.6%
Education, Training, and Library Occupations	204,673	10,075	194,599	6.6%	6.5%	6.6%
Arts, Design, Entertainment, Sports, and Media Occupations	65,233	2,041	63,192	2.1%	1.3%	2.2%
Healthcare Practitioner and Technical Occupations	178,976	5,178	173,798	5.8%	3.3%	5.9%
Healthcare Support Occupations	72,726	5,220	67,506	2.4%	3.4%	2.3%
Protective Service Occupations	64,160	3,142	61,018	2.1%	2.0%	2.1%
Food Preparation and Serving Occupations	137,602	8,898	128,704	4.5%	5.7%	4.4%
Building and Grounds Cleaning Occupations	107,682	7,707	99,975	3.5%	5.0%	3.4%
Personal Care and Service Occupations	96,991	4,945	92,047	3.1%	3.2%	3.1%
Sales and Related Occupations	326,740	16,580	310,160	10.6%	10.7%	10.6%
Office and Administrative Support Occupations	427,504	23,055	404,449	13.9%	14.9%	13.8%
Farming, Fishing, and Forestry Occupations	10,267	591	9,676	0.3%	0.4%	0.3%
Construction and Extraction Occupations	156,712	8,878	147,834	5.1%	5.7%	5.0%
Installations, Maintenance, and Repair Occupations	92,346	6,351	85,995	3.0%	4.1%	2.9%
Production Occupations	174,798	12,218	162,580	5.7%	7.9%	5.6%
Transportation and Material Moving Occupations	133,020	9,284	123,736	4.3%	6.0%	4.2%
Massachusetts Total	3,084,109	154,899	2,929,210	100.0%	100.0%	100.0%

Table C-3: Distribution of Employed 16-74 Year Old in New England by Disability Status and by Industry, 2003-2004

	Number of Employed			Percent Distribution		
Industry	All	Disabled	Not Disabled	All	Disabled	Not Disabled
Agriculture, ,Forestry, Fishing, and Hunting	46,168	3,526	42,642	0.7%	0.9%	0.7%
Mining	3,316	353	2,963	0.0%	0.1%	0.0%
Utilities	53,322	2,630	50,693	0.8%	0.7%	0.8%
Construction	465,463	28,877	436,586	6.8%	7.2%	6.7%
Non-Durable Manufacturing	257,793	13,122	244,671	3.7%	3.3%	3.8%
Durable Manufacturing	579,947	38,156	541,791	8.4%	9.5%	8.3%
Wholesale Trade	236,379	13,236	223,143	3.4%	3.3%	3.4%
Retail Trade	778,549	56,195	722,354	11.3%	14.0%	11.1%
Transportation and Warehousing	219,980	12,335	207,645	3.2%	3.1%	3.2%
Information	176,162	8,477	167,685	2.6%	2.1%	2.6%
Finance and Insurance	444,558	15,884	428,675	6.5%	4.0%	6.6%
Real Estate, Rental and Leasing	132,409	7,678	124,731	1.9%	1.9%	1.9%
Professional, Scientific and Technical	478,946	16,980	461,966	7.0%	4.2%	7.1%
Management	7,539	121	7,418	0.1%	0.0%	0.1%
Administrative Support and Waste Management	223,413	15,353	208,060	3.2%	3.8%	3.2%
Educational	684,255	33,405	650,850	9.9%	8.3%	10.0%
Healthcare and Social	969,545	62,246	907,300	14.1%	15.5%	14.0%
Arts, Entertainment and Recreation	129,582	6,356	123,227	1.9%	1.6%	1.9%
Accommodation and Food Services	406,566	26,192	380,374	5.9%	6.5%	5.9%
Other Services	307,493	21,442	286,051	4.5%	5.3%	4.4%
Public Services	288,937	18,646	270,291	4.2%	4.6%	4.2%
New England Total	6,890,316	401,207	6,489,109	100.0%	100.0%	100.0%

Table C-4: Distribution of Employed 16-74 Year Old in New England by Disability Status and by Occupation, 2003-2004

	Number of Employed			Percent Distribution		
Occupation	All	Disabled	Not Disabled	All	Disabled	Not Disabled
Management Occupations	700,688	30,169	670,519	10.2%	7.5%	10.3%
Business and Financial Operations Occupations	338,063	12,834	325,229	4.9%	3.2%	5.0%
Computer and Mathematical Occupations	205,015	7,190	197,825	3.0%	1.8%	3.0%
Architecture and Engineering Occupations	155,559	5,295	150,264	2.3%	1.3%	2.3%
Life, Physical, and Social Science Occupations	101,215	3,108	98,107	1.5%	0.8%	1.5%
Community and Social Services Occupations	124,078	8,719	115,360	1.8%	2.2%	1.8%
Legal Occupations	89,162	2,260	86,902	1.3%	0.6%	1.3%
Education, Training, and Library Occupations	456,559	21,404	435,155	6.6%	5.3%	6.7%
Arts, Design, Entertainment, Sports, and Media Occupations	138,536	6,549	131,987	2.0%	1.6%	2.0%
Healthcare Practitioner and Technical Occupations	377,113	14,066	363,047	5.5%	3.5%	5.6%
Healthcare Support Occupations	174,015	14,270	159,745	2.5%	3.6%	2.5%
Protective Service Occupations	128,429	9,129	119,300	1.9%	2.3%	1.8%
Food Preparation and Serving Occupations	332,043	24,515	307,528	4.8%	6.1%	4.7%
Building and Grounds Cleaning Occupations	239,770	21,696	218,074	3.5%	5.4%	3.4%
Personal Care and Service Occupations	217,794	15,143	202,651	3.2%	3.8%	3.1%
Sales and Related Occupations	763,420	43,499	719,921	11.1%	10.8%	11.1%
Office and Administrative Support Occupations	965,851	59,193	906,659	14.0%	14.8%	14.0%
Farming, Fishing, and Forestry Occupations	28,996	2,362	26,634	0.4%	0.6%	0.4%
Construction and Extraction Occupations	381,741	23,694	358,048	5.5%	5.9%	5.5%
Installations, Maintenance, and Repair Occupations	221,435	13,725	207,711	3.2%	3.4%	3.2%
Production Occupations	432,118	35,855	396,263	6.3%	8.9%	6.1%
Transportation and Material Moving Occupations	318,722	26,538	292,185	4.6%	6.6%	4.5%
New England Total	6,890,316	401,207	6,489,109	100.0%	100.0%	100.0%

Table C-5: Distribution of Employed 16-74 Year Old in the U.S. by Disability Status and by Industry, 2003-2004

	Number of Employed			Percent Distribution		
Industry	All	Disabled	Not Disabled	All	Disabled	Not Disabled
Agriculture, Forestry, Fishing, and Hunting	1,790,450	139,423	1,651,027	1.4%	1.6%	1.3%
Mining	526,296	41,287	485,009	0.4%	0.5%	0.4%
Utilities	1,132,048	61,106	1,070,942	0.9%	0.7%	0.9%
Construction	9,770,205	636,136	9,134,069	7.4%	7.4%	7.4%
Non-Durable Manufacturing	5,762,874	362,480	5,400,395	4.4%	4.2%	4.4%
Durable Manufacturing	10,423,872	689,286	9,734,586	7.9%	8.0%	7.9%
Wholesale Trade	4,955,331	281,367	4,673,964	3.7%	3.3%	3.8%
Retail Trade	15,404,660	1,084,672	14,319,988	11.6%	12.7%	11.6%
Transportation and Warehousing	5,519,551	397,746	5,121,806	4.2%	4.6%	4.1%
Information	3,429,273	188,505	3,240,768	2.6%	2.2%	2.6%
Finance and Insurance	6,772,872	285,856	6,487,016	5.1%	3.3%	5.2%
Real Estate, Rental and Leasing	2,660,956	180,339	2,480,617	2.0%	2.1%	2.0%
Professional, Scientific and Technical	7,819,637	346,901	7,472,737	5.9%	4.0%	6.0%
Management	82,228	3,692	78,536	0.1%	0.0%	0.1%
Administrative Support and Waste Management	4,942,445	398,675	4,543,770	3.7%	4.7%	3.7%
Educational	11,309,708	631,857	10,677,851	8.5%	7.4%	8.6%
Healthcare and Social	15,853,548	1,129,028	14,724,520	12.0%	13.2%	11.9%
Arts, Entertainment and Recreation	2,500,195	163,507	2,336,688	1.9%	1.9%	1.9%
Accommodation and Food Services	8,717,876	588,261	8,129,615	6.6%	6.9%	6.6%
Other Services	6,419,808	514,298	5,905,510	4.8%	6.0%	4.8%
Public Services	6,596,831	442,668	6,154,163	5.0%	5.2%	5.0%
U.S. Total	132,390,656	8,567,085	123,823,571	100.0%	100.0%	100.0%

Table C-6: Distribution of Employed 16-74 Year Old in the U.S. by Disability Status and by Occupation, 2003-2004

	Number of Employed			Percent Distribution		
Occupation	All	Disabled	Not Disabled	All	Disabled	Not Disabled
Management Occupations	12,572,578	611,493	11,961,085	9.5%	7.1%	9.7%
Business and Financial Operations Occupations	5,634,846	250,903	5,383,943	4.3%	2.9%	4.3%
Computer and Mathematical Occupations	3,092,476	128,006	2,964,470	2.3%	1.5%	2.4%
Architecture and Engineering Occupations	2,642,846	110,957	2,531,889	2.0%	1.3%	2.0%
Life, Physical, and Social Science Occupations	1,255,277	47,350	1,207,927	0.9%	0.6%	1.0%
Community and Social Services Occupations	2,060,191	155,025	1,905,166	1.6%	1.8%	1.5%
Legal Occupations	1,500,599	59,633	1,440,966	1.1%	0.7%	1.2%
Education, Training, and Library Occupations	7,507,206	389,838	7,117,368	5.7%	4.6%	5.7%
Arts, Design, Entertainment, Sports, and Media Occupations	2,468,621	126,706	2,341,915	1.9%	1.5%	1.9%
Healthcare Practitioner and Technical Occupations	6,473,014	308,704	6,164,310	4.9%	3.6%	5.0%
Healthcare Support Occupations	2,889,436	226,365	2,663,071	2.2%	2.6%	2.2%
Protective Service Occupations	2,782,620	193,427	2,589,193	2.1%	2.3%	2.1%
Food Preparation and Serving Occupations	6,833,610	489,900	6,343,710	5.2%	5.7%	5.1%
Building and Grounds Cleaning Occupations	4,900,550	498,114	4,402,436	3.7%	5.8%	3.6%
Personal Care and Service Occupations	3,976,682	342,183	3,634,499	3.0%	4.0%	2.9%
Sales and Related Occupations	15,084,674	914,709	14,169,966	11.4%	10.7%	11.4%
Office and Administrative Support Occupations	19,544,448	1,314,328	18,230,120	14.8%	15.3%	14.7%
Farming, Fishing, and Forestry Occupations	913,216	67,167	846,049	0.7%	0.8%	0.7%
Construction and Extraction Occupations	8,032,114	536,644	7,495,470	6.1%	6.3%	6.1%
Installations, Maintenance, and Repair Occupations	4,787,243	340,594	4,446,649	3.6%	4.0%	3.6%
Production Occupations	9,392,246	758,701	8,633,545	7.1%	8.9%	7.0%
Transportation and Material Moving Occupations	8,046,170	696,341	7,349,830	6.1%	8.1%	5.9%
Total	132,390,656	8,567,085	123,823,571	100.0%	100.0%	100.0%

Appendix D: State Ranking on Mean Annual Earnings of 16-74 Year Old Full-Time, Year-Round Disabled Workers by State, 2003-2004 Averages

The 2003 and 2004 ACS surveys also collected information from each employed respondent on their earnings from wage and salary employment and self-employment in the twelve month period prior to the survey. We used these data to generate weighted average (mean) annual earnings of 16-74 year old full-time, year-round disabled workers in all 50 states and the District of Columbia. These earnings estimates were produced for all disabled workers and for disabled male and female workers separately. The following tables display the mean annual earnings of 16-74 year old full-time, year-round workers by state during the 2002-2003 period.

Table D-1: State Ranking on Mean Annual Earnings of 16-74 Year Old Disabled Workers Who Worked Full-Time, Year-Round During 2002-2003, Total and by Gender

Rank	State	All	State	Men	State	Women
1	Dist of Columbia	$46,877	Dist of Columbia	$56,690	New Jersey	$38,792
2	New Jersey	$45,936	New Jersey	$51,660	Maryland	$38,792
3	Maryland	$43,680	**Massachusetts**	**$49,756**	California	$37,105
4	**Massachusetts**	**$43,272**	Hawaii	$48,724	Connecticut	$36,869
5	Connecticut	$43,058	Maryland	$48,241	Dist of Columbia	$36,431
6	California	$42,653	Connecticut	$47,594	New York	$35,202
7	Hawaii	$42,400	California	$46,705	New Hampshire	$33,925
8	Illinois	$41,057	Illinois	$46,394	**Massachusetts**	**$33,865**
9	New York	$40,896	Alaska	$46,287	Delaware	$33,673
10	New Hampshire	$40,005	Delaware	$45,822	Virginia	$33,663
11	Delaware	$39,823	New York	$45,639	Colorado	$33,618
12	Colorado	$39,707	Washington	$44,389	Illinois	$33,395
13	Washington	$39,589	Michigan	$44,250	Hawaii	$32,122
14	Alaska	$39,370	Rhode Island	$43,935	Washington	$31,944
15	Virginia	$38,926	New Hampshire	$43,622	Georgia	$31,763
16	Michigan	$38,672	Colorado	$43,516	Nevada	$31,688
17	Georgia	$38,588	Georgia	$43,306	Rhode Island	$31,291
18	Rhode Island	$38,428	Virginia	$42,827	Arizona	$31,287
19	Minnesota	$37,980	Minnesota	$42,427	Minnesota	$31,052
20	Pennsylvania	$36,930	Utah	$42,170	Michigan	$31,027
21	Nevada	$36,928	Pennsylvania	$41,209	Pennsylvania	$30,831
22	Utah	$36,718	Texas	$40,848	Ohio	$30,010
23	Texas	$36,318	Nevada	$40,468	Alaska	$29,861
24	Florida	$35,334	North Dakota	$39,929	Wisconsin	$29,798
25	Wisconsin	$35,174	Florida	$39,595	Florida	$29,713
26	Ohio	$34,902	Louisiana	$39,430	Texas	$29,580
27	Indiana	$34,365	Indiana	$39,032	Oregon	$29,348
28	Oregon	$34,032	Ohio	$38,767	New Mexico	$29,220
29	Wyoming	$34,021	Wisconsin	$38,385	Idaho	$28,997
30	North Dakota	$33,859	Tennessee	$38,199	Oklahoma	$28,365
31	Missouri	$33,571	Wyoming	$38,110	Alabama	$28,257
32	Louisiana	$33,530	South Carolina	$38,052	Utah	$27,891
33	Arizona	$33,502	South Dakota	$37,863	North Carolina	$27,829
34	Oklahoma	$33,269	Kansas	$37,463	Iowa	$27,574
35	South Carolina	$33,122	North Carolina	$37,442	Missouri	$27,522
36	North Carolina	$33,095	Missouri	$37,103	Wyoming	$27,229
37	Tennessee	$33,090	Oregon	$37,048	Indiana	$26,896
38	Kansas	$32,713	Maine	$36,840	Vermont	$26,531
39	Iowa	$32,691	Oklahoma	$36,615	Tennessee	$26,156

40	Idaho	$32,661	Kentucky	$36,581	South Carolina	$25,547
41	Alabama	$32,421	Vermont	$36,103	Arkansas	$25,464
42	Maine	$32,389	Nebraska	$36,058	Kentucky	$25,385
43	New Mexico	$32,381	Iowa	$35,842	Kansas	$25,243
44	Vermont	$32,107	Alabama	$35,488	Maine	$24,987
45	Kentucky	$32,091	Arizona	$35,144	Montana	$24,752
46	South Dakota	$31,664	Idaho	$34,903	Nebraska	$24,643
47	Nebraska	$31,533	New Mexico	$34,586	Louisiana	$23,844
48	Arkansas	$30,743	Mississippi	$34,096	Mississippi	$23,555
49	Mississippi	$29,894	Arkansas	$34,044	North Dakota	$23,123
50	Montana	$29,551	West Virginia	$33,932	West Virginia	$22,991
51	West Virginia	$29,113	Montana	$32,271	South Dakota	$22,317
	U.S.	$37,227	U.S.	$41,537	U.S.	$31,141

Appendix E: Definitions of the Variables Appearing in the Multivariate Statistical Analyses of the Annual Earnings of Disabled Workers

Variable Name	Definition
Log of Annual Earnings	The natural log of the annual earnings of 16-74 year old full time year-round workers
Male	A dichotomous gender variable 1 = Male 0 = Female
Black	A dichotomous race variable 1 = if Black, non-Hispanic 0 = if else
Asian	A dichotomous race variable 1 = if Asian, non-Hispanic 0 = if else
Hispanic	A dichotomous race variable 1 = if Hispanic 0 = if else
Other Race	A dichotomous race variable 1 = if Other Race 0 = if else
1-12 Years of Schooling	A dichotomous educational variable 1 = if 1-12 years of schooling, no HS diploma or GED 0 = if else
1-3 Years of College	A dichotomous educational variable 1 = if 1-3 years of college including Associate's degree 0 = if else
Bachelor's Degree	A dichotomous educational variable 1 = if obtained Bachelor's degree 0 = if else
Masters or Higher Degree	A dichotomous educational variable 1 = if obtained Master's or higher degree 0 = if else
Foreign Born	A dichotomous nativity status variable 1 = if foreign born 0 = if else
Married	A dichotomous marital status variable 1 = if married 0 = if else
Experience	Years of potential work experience. Its value was equal to age-5-years of education completed of education completed
Experience Squared	Years of potential work experience squared.
Annual Hours	Number of total hours worked during 2004

Note: All of the industry and occupational variables are also dichotomous variables where a value of 1 represents employment in given industry or occupation and 0 represents other employment.