

Health Care Employment, Structure and Trends in Massachusetts

Chapter 224 Workforce Impact Study

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Prepared for:
The Commonwealth of Massachusetts
Office of the State Auditor

December 2016

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Introduction

The economic expansion of the 1990s in Massachusetts was a period of extraordinary job creation that resulted in sharp increases in living standards in the state. Payroll employment levels in Massachusetts increased by more than 20 percent between 1992 and 2000; the official unemployment rate fell to an historical low of 2.6 percent in 2000. Job losses in the state's once rapidly growing manufacturing sector were more than offset by a surging construction industry and rapid growth in the state's professional and business sector.

Unlike the post-2000 period when the health care and social assistance sector took center stage in the state's labor market, the industry was among the slowest growing major industry sectors in Massachusetts during the 1990s. Among all the major industry sectors in the state only government employment grew more slowly than job growth in the health care and social assistance sector. The share of total employment concentrated in the health care and social assistance industry in the state declined during the 1990s as the state economy added record numbers of new wage and salary jobs.¹

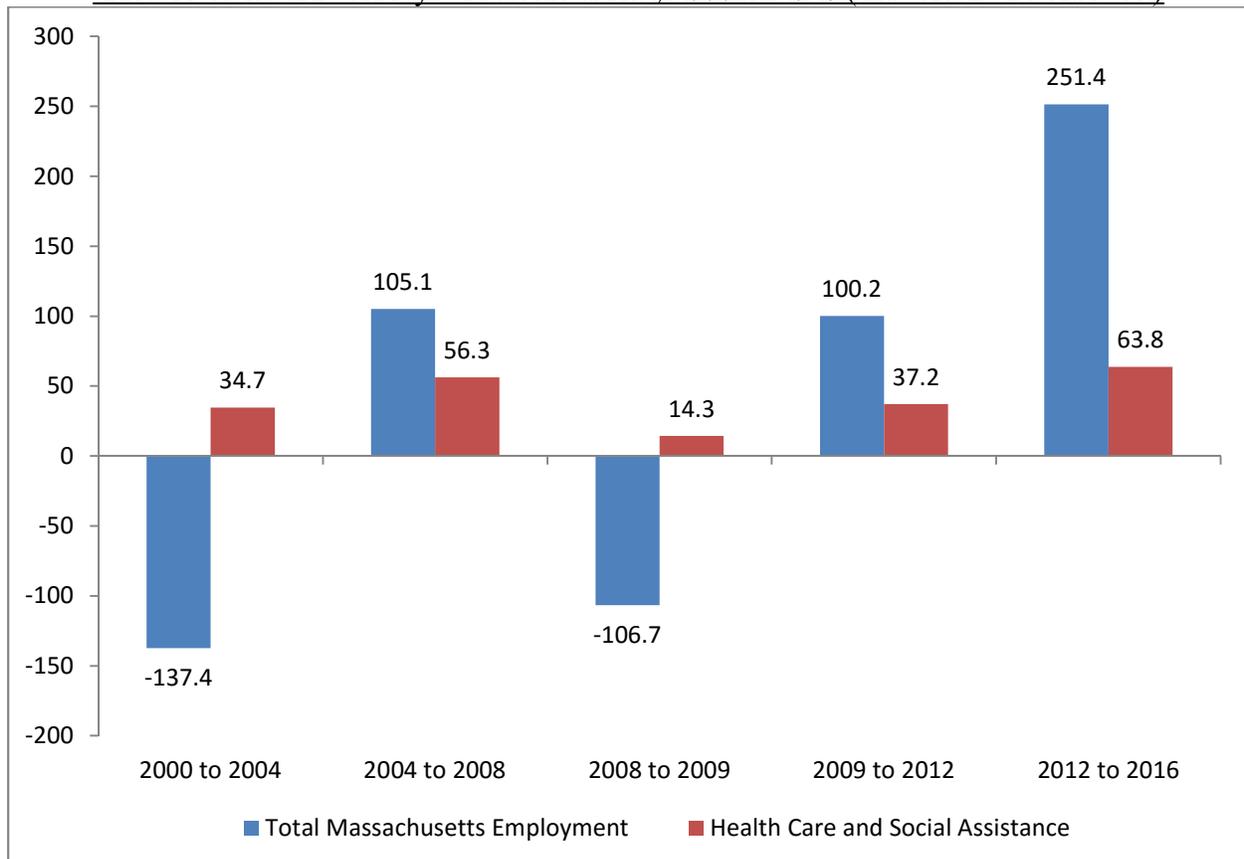
Since the end of the 1990s jobs expansion, industries that make up the health care and social assistance sector in the state have been the mainstay of countercyclical employment stability and new job creation in the Commonwealth. The health care and social assistance industry has served as a basic source of employment and wage stability during a period of severe economic turbulence that characterized the first decade of the 21st century in the Commonwealth. Two severe economic recessions since 2000 resulted in massive jobs losses in the state and across all regions of the state; yet despite these declines in employment and accompanying income losses, the health care and social assistance sector was able to add jobs providing new employment opportunities in an otherwise declining labor market environment.

The health care and social assistance industries were leaders in new job creation during the economic recoveries from both the dot.com recession of 2001 and the Great Recession of 2008-2009. Health care and social assistance organizations created about one-half of all the employment gains posted in the state during the dot.com recovery. During the early stages of the

¹ Paul Harrington and Neeta Fogg, *Healthcare Employment Expansion in the Context of Long Term Economic Turbulence: The Massachusetts Experience*, Center for Labor Markets and Policy, Drexel University, Philadelphia, October, 2011

recovery from the Great Recession (the 2009 to 2012 period), the health care and social assistance sector accounted for 37 percent of the total number of jobs created. Over the entire 2000 to 2012 period, characterized as a period of extreme economic disruption, the health care sector and social assistance industry *added* more than 142,000 jobs while all other industries in the state, ranging from construction and manufacturing to high-end services, leisure and hospitality, *lost* 180,000 jobs.

Chart 1: Trends in Non-Farm Payroll Employment in the Health Care and Social Assistance Industry in Massachusetts, 2000 to 2016 (Numbers in Thousands)



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics Survey Program, Massachusetts Statewide Non-Agricultural Employment, Annual Averages.

Since 2012, the state economy has experienced acceleration in the pace of new job creation. Employment growth is occurring in a much broader range of industries than had been the case in the recent past. Between 2012 and 2016, Massachusetts employers added more than 251,000 payroll jobs, driving the state’s unemployment rate down to under to 3.6 percent by the

fourth quarter of 2016.² Firms in the health care and social assistance industry increased employment levels by 64,000 jobs over the last four years, continuing to grow at a rate (11.5%) that was 1.5 times that of the overall pace of employment growth statewide (7.6%).

At the end of the 1990s, the health care and social assistance industry accounted for 12 percent of total payroll employment in Massachusetts (about one of every 8 jobs). Today, one of every six Bay State jobs is in the health care and social assistance sector. The evidence that is available to us suggests that in the future (over the next 20 years) the health care and social assistance industries will account for an even larger share of payroll jobs in Massachusetts. We expect continued above-average rates of job creation in the state's health care and social assistance industry in years to come.

It is important to note that fundamental changes have occurred in the way that health care is delivered in Massachusetts in recent years and this is reflected in the changing nature of demand for labor among the various component industries that make up the health care and social assistance sector. This chapter examines the nature of these changes along a variety of labor market related dimensions and makes some observations about the outlook for growth and future change in health care diagnostic and practitioner occupations and in health care support/direct care occupations.

The Industry Components of the Health Care Sector in Massachusetts

The health care and social assistance sector is composed of four key industry subsectors including ambulatory care, hospitals, nursing homes and residential care facilities, and social assistance organizations. Not all of the components of the health care and social assistance industry are part of the state's health care sector. Employment data for health care and social assistance providers are often aggregated and reported together by federal and state agencies and frequently interpreted by the media and many analysts as a general measure of health care employment. However, this definition of health care is overly broad.

Another measure of health care industry employment that is frequently used by many analysts includes three major health care subsectors: ambulatory care, hospitals, and nursing

² This 2016 annual average employment data is estimated using 9 months of actual employment data and then estimating employment for the final 2016 quarter using historical data for those time periods to produce an average employment measure using relevant Current Employment Statistics Survey data for Massachusetts.

home and residential care facilities. Persons employed in one of these three key subsectors of the health care sector work in establishments that are engaged in the provision of health care services on an inpatient and outpatient basis. Staffing in these three key health care industries are dominated by health care professional and health care support occupations. This health care sector definition, frequently used in studies of health care employment, excludes social assistance since a large part of the social services industry includes organizations that engage in a variety of activities such as child and youth services; community, food and housing services; and child day care services. However, we have concluded that while including the entire social assistance sector in a definition of health care is overly broad, it is clear that parts of the state's social assistance sector have become an important source of 'at home' health care support services and play an increasingly important role in the care of the chronically ill and disabled.³

As the Massachusetts health care system has adjusted to changes in the nature of health care finance and health insurance coverage, elements of the social assistance industry in recent years have begun to take on important roles in health care delivery, especially in regard to efforts to help individuals with various health problems remain at home. Indeed, we find that health care employment growth had been greatest in those subsectors of the health care and social assistance industry that are focused on helping individuals with chronic illness and a range of disabling conditions (physical, mental, emotional, and cognitive) remain at home and avoid admission into institutionalized health care settings including nursing homes and hospitals.

One of the most important impacts of this development has been very rapid growth in payroll employment levels in those health care and social assistance subsector industries that employ substantial numbers of workers in direct care occupations that require little or no health or medical education or work experience. The individual and family services subsector includes very large numbers of workers employed in direct care occupations including home health aides, personal care aides and attendants, community health workers, and social and human service assistants who are engaged in providing direct care services to the elderly and disabled. In this

³ For a detailed discussion of the changing role of 'at home' patient care services, see: "Special Topics Report: Selected Health Care Support and Direct Care Occupations in Massachusetts," Prepared by Commonwealth Corporation and the Center for Labor Markets and Policy, Drexel University for the Commonwealth of Massachusetts Office of the State Auditor, September 2016.

section of the chapter we begin by exploring employment developments in the four major components of the health care sector.⁴

Trends in Employment in the Four Basic Components of the Health Care Sector

We examine trends in the four major components of the health care sector over three distinct time periods:

- 2000 to 2008, a period of very rapid growth in health care employment in the state,
- 2008 to 2012, just prior to the enactment of Chapter 224 cost containment legislation, a period when the state labor market experienced substantial job losses that were followed by an initially weak jobs recovery,
- Post-2012, following implementation of Chapter 224, a period when the state economy began creating jobs at a pace not seen since the 1990s.

We chose these time periods as they represent a change in the nature of health care employment growth prior to the onset of the Great Recession in 2008 and the post-recession recovery.

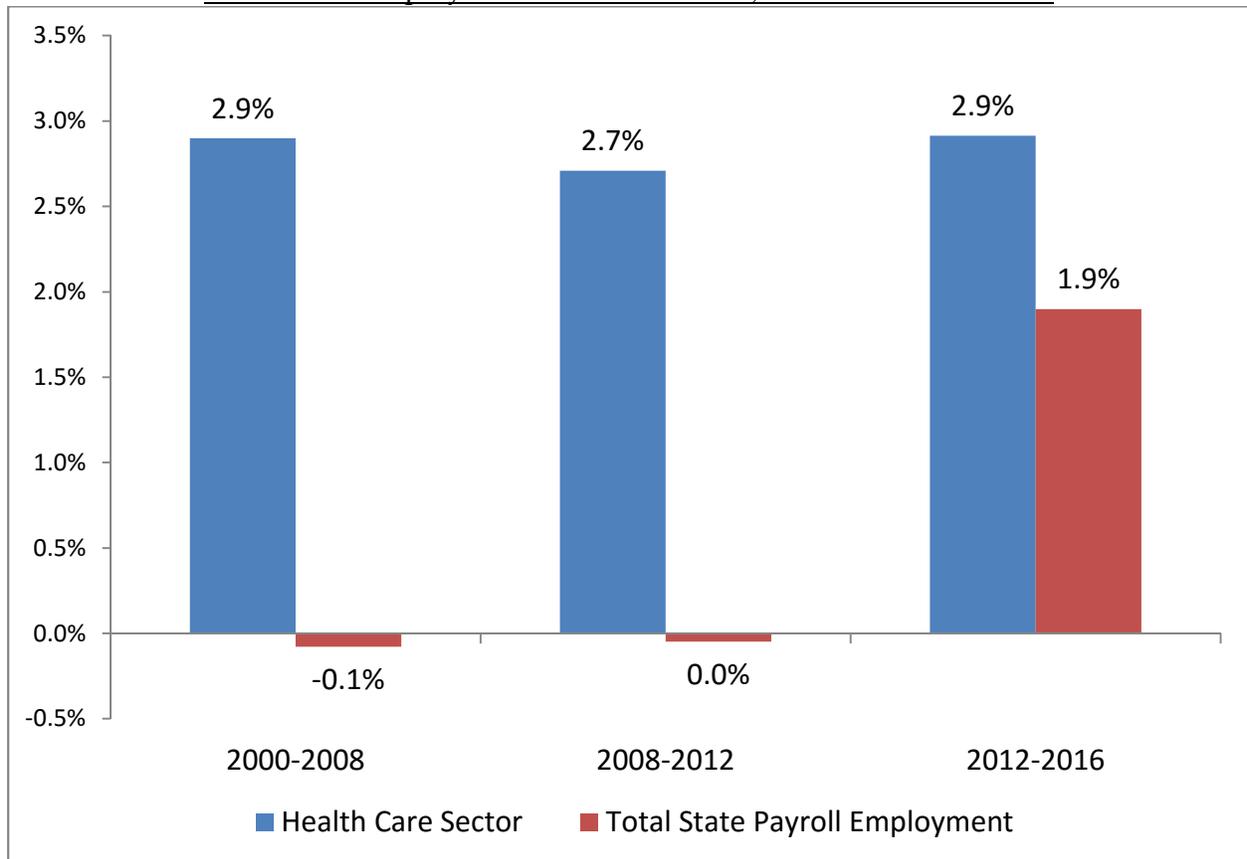
The rising demand for health care has been fueled by an aging population characterized by higher rates of patient acuity and morbidity combined with federal and state legislation that mandated and subsidized health insurance coverage. The health care system in the state has expanded its payroll employment levels to meet the sharp increase in the demand for health care services. Since 2000 the pace of new job creation in the health care industry has been quite rapid, and despite cyclically unstable economic conditions its pace of growth has remained largely unchanged.

Between 2000 and 2012 the state experienced widely varying rates of change in overall employment levels as the state economy weathered two severe recessions. Yet undeterred by poor economic conditions, the state's health care sector's payroll employment levels have increased by annual rates of 2.9 percent and 2.7 percent, respectively, over the 2000-2008 and 2008-2012 periods. More recently, the state job market has rebounded over the last four years

⁴ For a discussion on defining the health care sector, see: *Health Care Employment, Structure, and Trends in Massachusetts*, Chapter 224 Baseline Study, Prepared by Commonwealth Corporation and the Center for Labor Markets and Policy, Drexel University, July 2014.

and overall wage and salary employment levels in Massachusetts have increased by a relatively robust 1.9 percent per year. Even this surge in economic activity has not altered the underlying pace of new job creation in the health care sector, where employment levels have increased by an average of 2.9 percent per year between 2012 and 2016.

Chart 2: Annual Average Rate of Growth in Total Non-Farm Payroll Employment and Health Care Sector Employment in Massachusetts, Selected Time Periods



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics Survey Program, Massachusetts Statewide Non-Agricultural Employment, Annual Averages.

While the pace of new job creation in the state’s health care sector has not changed much, the way the health care system deploys labor resources has changed considerably, with increased emphasis on staffing that can serve patients on an outpatient and in-home basis. Between 2000 and 2008, a period including the dot.com recession and subsequent recovery, overall health care employment levels in the state increased from 376,100 to 463,300, a rise of 87,200 jobs, a nearly one-quarter gain in employment over eight years. Hospitals were the most important source of new job creation during this time with employment levels rising by 33,200, accounting for 38

percent of the total increase in health care sector employment over the period. Ambulatory care providers saw employment levels increase by about 20,000 jobs, representing an increase of 16.5 percent. Nursing home and residential care providers also added considerably to their payroll employment levels over the 2000-2008 period; employment increased by nearly 11,000 jobs or 12.7 percent. Individual and family service providers experienced extraordinary gains in payroll employment between 2000 and 2008. Establishments in this industry saw payroll employment levels rise from 28,300 during 2000 to more than 51,000 by 2008, an 82 percent increase in just eight years.

Table 1: Trends in Annual Average Employment in the Four Major Components of the Health Care Sector in Massachusetts, 2000 to 2016
(Numbers in Thousands)

2000-2008	2000	2008	Absolute Change	Percent Change
Ambulatory Care	120.3	140.2	19.9	16.5%
Hospitals	141.9	175.1	33.2	23.4%
Nursing and Residential Care	85.6	96.5	10.9	12.7%
Individual and Family Services	28.3	51.5	23.2	82.0%
Total Health Care Sector	376.1	463.3	87.2	23.2%
2008-2012	2008	2012	Absolute Change	Percent Change
Ambulatory Care	140.2	159.6	19.4	13.8%
Hospitals	175.1	183.9	8.8	5.0%
Nursing and Residential Care	96.5	101.0	4.5	4.7%
Individual and Family Services	51.5	69.0	17.5	34.0%
Total Health Care Sector	463.3	513.5	50.2	10.8%
2012-2016	2012	2016	Absolute Change	Percent Change
Ambulatory Care	159.6	186.2	26.6	17%
Hospitals	183.9	195.0	11.1	6%
Nursing and Residential Care	101	102.8	1.8	2%
Individual and Family Services	69	89.3	20.3	29%
Total Health Care Sector	513.5	573.3	59.8	12%

Source: U.S. Bureau of Labor Statistics, Current Employment Statistics Survey Program, Massachusetts Statewide Non-Agricultural Employment, Annual Averages.

The pattern of new job creation in the state's health care sector changed after 2008 with most of the new job creation occurring in outpatient-oriented organizations. Both the hospital and nursing and residential care industries experienced substantial reductions in their annual

average rate of new job creation over the period. The hospital industry added 8,800 jobs over the four-year period between 2008 and 2012, increasing employment by 5 percent. Between 2000 and 2008 hospital employment rose by an average of 2.9 percent per year, but between 2008 and 2012 the employment growth rate in the state's hospital industry declined to 1.3 percent per year, a 60 percent decline in the pace of employment growth. The nursing and residential care industry also added jobs at a reduced pace during 2008 to 2012 growing by 1.2 percent during this period, down from a 1.6 percent per year average growth rate between 2000 and 2008.

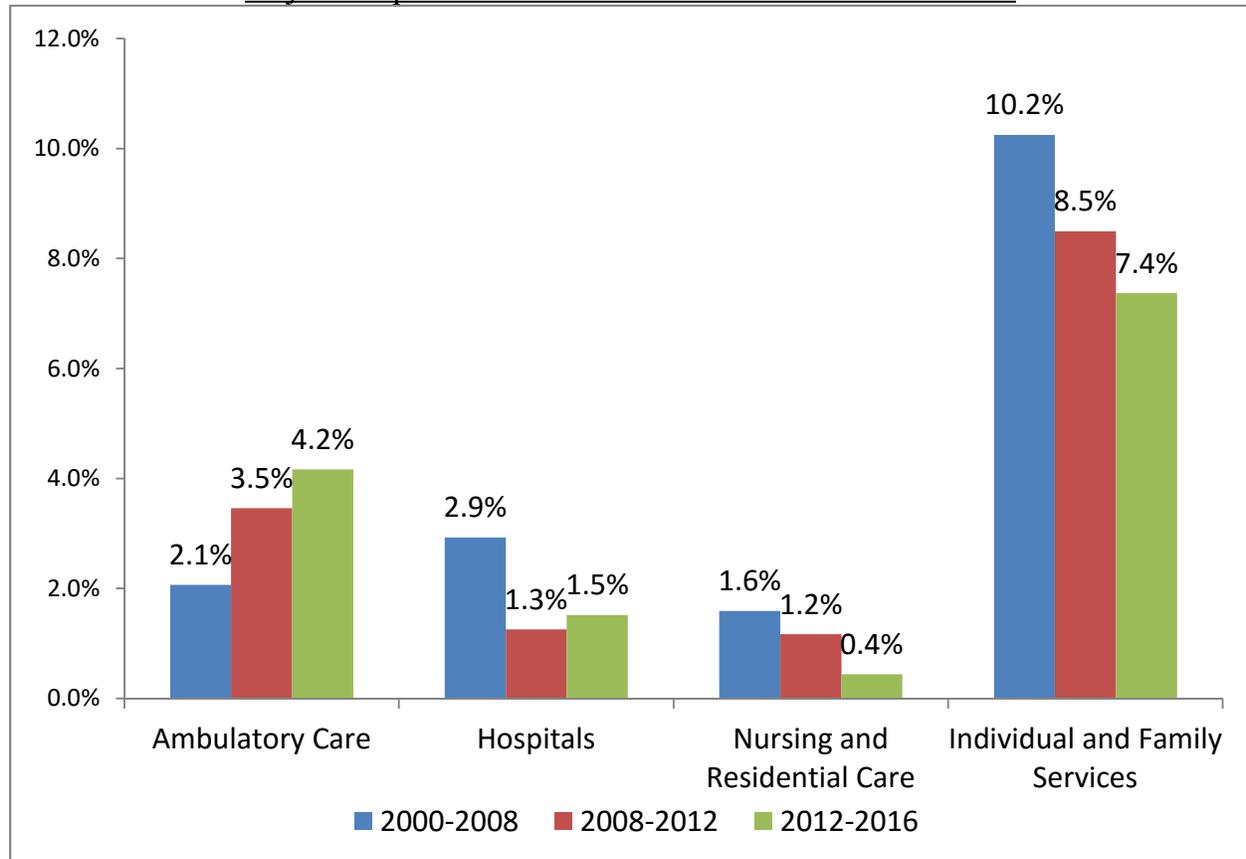
Employment in the ambulatory care industry increased at an accelerated rate between 2008 and 2012. Providers in this industry increased employment levels from 140,200 during 2008 to 159,600 by 2012, representing an increase of 19,400 jobs. The ambulatory care industry saw its pace of new job creation rise from 2.1 percent per year during 2000 to 2008 to 3.5 percent per year during 2008 to 2012. The individual and family services industry continued its very rapid pace of new job creation adding more than 17,000 jobs and growing by 34 percent over just 4 years. Between 2008 and 2012 the ambulatory care and individual and family service industries together created 37,000 of the 50,000 new jobs generated by the state's health care sector, accounting for about 3 out of 4 new health care jobs in the Commonwealth.

Over the past four years between 2012 and 2016, the 2008-2012 pattern of job growth in the health care industry in Massachusetts has persisted. Overall employment in the health care sector rose by an annual average of 2.9 percent, adding a total of nearly 60,000 jobs in the past four years. However, most of this growth was outside of the traditional hospital and nursing home inpatient service providers. The ambulatory care industry added 26,600 jobs between 2012 and 2016, increasing employment by 17 percent over the four-year period. The individual and family services subsector added 20,300 jobs, increasing employment by 29 percent in just four years. Together, these two outpatient-oriented industries created about 47,000 new jobs in the past four years, about 80 percent of the total increase in health care sector jobs between 2012 and 2016.

Employment in the state's hospital subsector rose from 183,900 during 2012 to 186,200 by 2016, an increase of 11,100 jobs representing an annual average rate of growth of 1.5 percent. This is about the same as its 2008 to 2012 pace of growth and well below the rate of hospital job creation observed during 2000 to 2008. The pace of job creation in the nursing and residential

care industry declined further with annual job growth falling to just 0.4 percent between 2012 and 2016; this industry added just 1,800 jobs over the four year period.

Chart 3: Annual Average Rate of Growth in Payroll Employment in the Four Major Components of the Massachusetts Health Care Sector



Source: U.S. Bureau of Labor Statistics, Current Employment Statistics Survey Program, Massachusetts Statewide Non-Agricultural Employment, Annual Averages.

These findings indicate that beginning in 2008 an important change occurred in the source of new job creation in the state’s health care delivery system, with employment growth slowing considerably among the traditional inpatient-oriented provider industries and accelerating in outpatient-oriented health care subsectors. Hospitals and nursing homes accounted for one-half of all new health care sector jobs created between 2000 and 2008, but just one-quarter of all health care employment growth between 2008 and 2016. Ambulatory care and individual and family service providers are now the overwhelming source of new health care sector job creation in the Commonwealth.

These changes in the sources of health care sector growth began well before Chapter 224 legislation was enacted in 2012. Indeed, trends in health care job creation observed between 2012 and 2016 are quite similar to those we saw develop between 2008 and 2012. The economic recession of 2008 and a widespread effort by employers to reduce the rate of growth in health care costs at that time likely had an important impact on the slowdown in employment growth among hospitals and nursing homes over the post-2008 period. The central role that ambulatory care and individual and family services began to play in creating health care jobs during the post-2008 period is likely the product of efforts to reduce health care costs even as demographic forces and the implementation of universal health care coverage in Massachusetts increased the potential demand for health care services in the Commonwealth.

In summary, the findings described above reveal an important shift in the pattern of job creation within the health care sector in Massachusetts since 2008. Instead of growth in the inpatient-oriented and capital-intensive hospital and nursing home and residential care industries such as that which occurred between 2000 and 2008, health care employment growth in recent years is heavily concentrated in outpatient-oriented industries and as we shall see in the following sections, in industries that employ large numbers of direct care workers in positions that require little or no medical or health education or work experience. Below, we examine in greater detail the sources of employment growth in each of the four major components of the health care delivery system in the state and specific elements within these four components.

Up to this point we have used employment data from the Current Employment Statistics (CES) survey program, a monthly sample survey of business establishments in Massachusetts (and across the nation) that measures total payroll employment and employment by industry. Findings from the CES survey may be familiar to many readers since they serve as an important component of both the national and state monthly jobs report released by the U.S. Bureau of Labor Statistics and the Massachusetts Department of Labor and Workforce Development (DLWD).

The CES data offer a number of important advantages in measuring employment trends, but as a sample survey it is limited in its ability to provide important data on more disaggregated components of the industry. In the section below we rely on employment data derived from the Quarterly Census of Employment and Wages that produces employment measures at the detailed

industry level based on information submitted by employers as part of their quarterly tax filings under state unemployment insurance statute. Because essentially all employers (about 98 percent) must submit these tax filings each quarter, it means that a complete census count of jobs can be created for a wide range of industries unhampered by sample size limitations.

We use employment data organized by industry from the QCEW program for Massachusetts to take a closer look at the important elements within the four major industry subsectors of the state's health care sector. By examining these data at a more refined level we are able to produce some very useful insights into the changing structure of employment within the state's health care delivery system. However, because the QCEW is in effect a complete census of state employers conducted each calendar quarter; data from the program become available with a much longer time lag than findings from the CES monthly sample. Thus, the section below analyzes QCEW findings through the latest time period available—the fourth quarter of 2015.

Ambulatory Care

The ambulatory care industry in Massachusetts is composed of a range of health care practitioners and health care support staff who provide outpatient services in a production process that differs in important ways from hospitals and nursing homes. Production of services in the ambulatory care industry does not rely as extensively on facilities and equipment as is the case in the traditional hospital and nursing home industries, nor do ambulatory service organizations engage in the provision of inpatient services. The ambulatory care sector is composed of the following health care service providers:

- offices of physicians, including mental health physicians
- offices of dentists
- offices of other health practitioners, including chiropractors, optometrists, mental health practitioners, specialty therapists, podiatrists, other health practitioners such as dietitians, midwives and registered nurses offices
- outpatient care centers
- medical and diagnostic laboratories
- home health care services
- other ambulatory care services such as ambulance services, blood banks and organ banks

Even a casual review of these elements of the ambulatory care sector would suggest that there is large variation in the staffing structures of these organizations and suggests a lot about the nature of services provided. For example, in Massachusetts, physicians with various specializations, clerical workers and health care support workers dominate the staffing pattern of the offices of physicians' industry group. Home health agencies have a very different staffing structure. Home health aides, personal care workers, registered nurses and licensed practical nurses dominate employment in these organizations.

Obviously the educational attainment, licensing requirements and need for medical knowledge vary dramatically between these two groups of the ambulatory care sector. In the case of offices of physicians, the education and medical knowledge requirements are at the very highest level. In contrast, in the home health care industry minimal schooling is required for employment and there are almost no medical knowledge requirements for employment in the home health aide and personal care aide occupations.

Table 2: Employment Trends in Specific Industry Groups of the Ambulatory Health Care Sub-Sector in Massachusetts, 2000 to 2008

	2000	2008	Absolute Change	Relative Change
Offices of Physicians	44,876	50,403	5,527	12.3%
Offices of Dentists	18,119	21,662	3,544	19.6%
Offices of Other Health Practitioners	10,213	13,042	2,829	27.7%
Outpatient Care Centers Medical and Diagnostic Laboratories	17,304	18,751	1,447	8.4%
Home Health Care Services	3,634	4,830	1,196	32.9%
Other Ambulatory Health Care Services	19,664	24,548	4,883	24.8%
	6,344	7,129	784	12.4%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Each of the specific industry groups of the ambulatory health care industry in Massachusetts posted substantial employment gains during the 2000 to 2008 period. The home health care industry saw its covered employment levels rise by about one-quarter from 19,700 during 2000 to 24,500 by 2008. The offices of other health practitioners, which includes offices of mental health practitioners (except physicians) as well as physical, occupational and speech therapy, saw covered employment levels increase by 27 percent over the period, adding more

than 2,800 jobs. Employment in the offices of physicians posted large employment gains, adding 5,500 jobs and expanding by 12 percent between 2000 and 2008.

We noted earlier that the ambulatory care subsector experienced very rapid growth in covered employment levels between 2008 and 2016. The findings in Table 3 examine employment change in each of the major industry groups of the ambulatory care subsector during the 2008 to 2012 period and then separately for 2012 to 2015.

During the 2008-2012 recession/recovery period all of the elements of the ambulatory care industry in the state were able to increase their payroll employment levels. However, much of the new job creation in the industry was concentrated among home health care providers. Employers delivering home health care services increased employment by 8,400 jobs or by more than one-third in just four years. The offices of other health care practitioners also had very rapid

Table 3: Employment Trends in Specific Industry Groups of the Ambulatory Health Care Sub-Sector in Massachusetts, 2008 to 2015

2008-2012	2008	2012	Absolute Change	Relative Change
Offices of Physicians	50,403	53,989	3,587	7.1%
Offices of Dentists	21,662	22,391	729	3.4%
Offices of Other Health Practitioners	13,042	15,507	2,465	18.9%
Outpatient Care Centers	18,751	21,745	2,993	16.0%
Medical and Diagnostic Laboratories	4,830	5,029	199	4.1%
Home Health Care Services	24,548	32,971	8,423	34.3%
Other Ambulatory Health Care Services	7,129	7,922	793	11.1%
2012-2015	2012	2015	Absolute Change	Relative Change
Offices of Physicians	53,989	55,785	1,796	3.3%
Offices of Dentists	22,391	23,831	1,440	6.4%
Offices of Other Health Practitioners	15,507	17,643	2,136	13.8%
Outpatient Care Centers	21,745	23,482	1,737	8.0%
Medical and Diagnostic Laboratories	5,029	5,585	556	11.1%
Home Health Care Services	32,971	44,134	11,163	33.9%
Other Ambulatory Health Care Services	7,922	8,156	234	3.0%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

job growth, expanding their employment levels by 19 percent, adding 2,500 jobs. Similarly, outpatient care centers including family planning, mental health, substance abuse organizations and free standing surgical and medical centers added 3,000 jobs, growing by 16 percent over the

period. Employment in physicians’ offices grew by more than 3,500 jobs between 2008 and 2012, a robust 7 percent rate of growth over that time.

The shift of employment growth within the ambulatory care sector toward home health care providers accelerated further between 2012 and 2015. Home health care provider employment levels in Massachusetts increased from about 33,000 in 2012 to 44,100 by 2015, an increase of more than 11,100 jobs representing a remarkable 34 percent rise in employment in just three years. The offices of other health practitioners continued its robust pace of growth adding 2,100 jobs, representing a 14 percent rise in employment between 2012 and 2015. Employment growth slowed to just 1 percent per year in physicians’ offices.

These findings reveal that the large and rapid growth in ambulatory care employment was fueled by an extraordinary increase in employment in the home health care services industry group, as well as rapid growth in employment among offices of other health care practitioners and outpatient care centers.

Over the entire seven-year period between 2008 and 2015, home health care firms increased their employment levels from 24,500 to 44,100, representing an 80 percent increase in employment in just seven years. Moreover, the pace of new job creation among home health care providers accelerated in the last three years, from 8 percent per year between 2008 and 2012 to 11 percent per year between 2012 and 2015.

Table 4: Employment Trends in Specific Industry Groups of the Ambulatory Health Care Sub-Sector in Massachusetts, 2008 to 2015

	2008	2015	Absolute Change	Relative Change
Offices of Physicians	50,403	55,785	5,382	10.7%
Offices of Dentists	21,662	23,831	2,169	10.0%
Offices of Other Health Practitioners	13,042	17,643	4,601	35.3%
Outpatient Care Centers	18,751	23,482	4,731	25.2%
Medical and Diagnostic Laboratories	4,830	5,585	755	15.6%
Home Health Care Services	24,548	44,134	19,586	79.8%
Other Ambulatory Health Care Services	7,129	8,156	1,028	14.4%

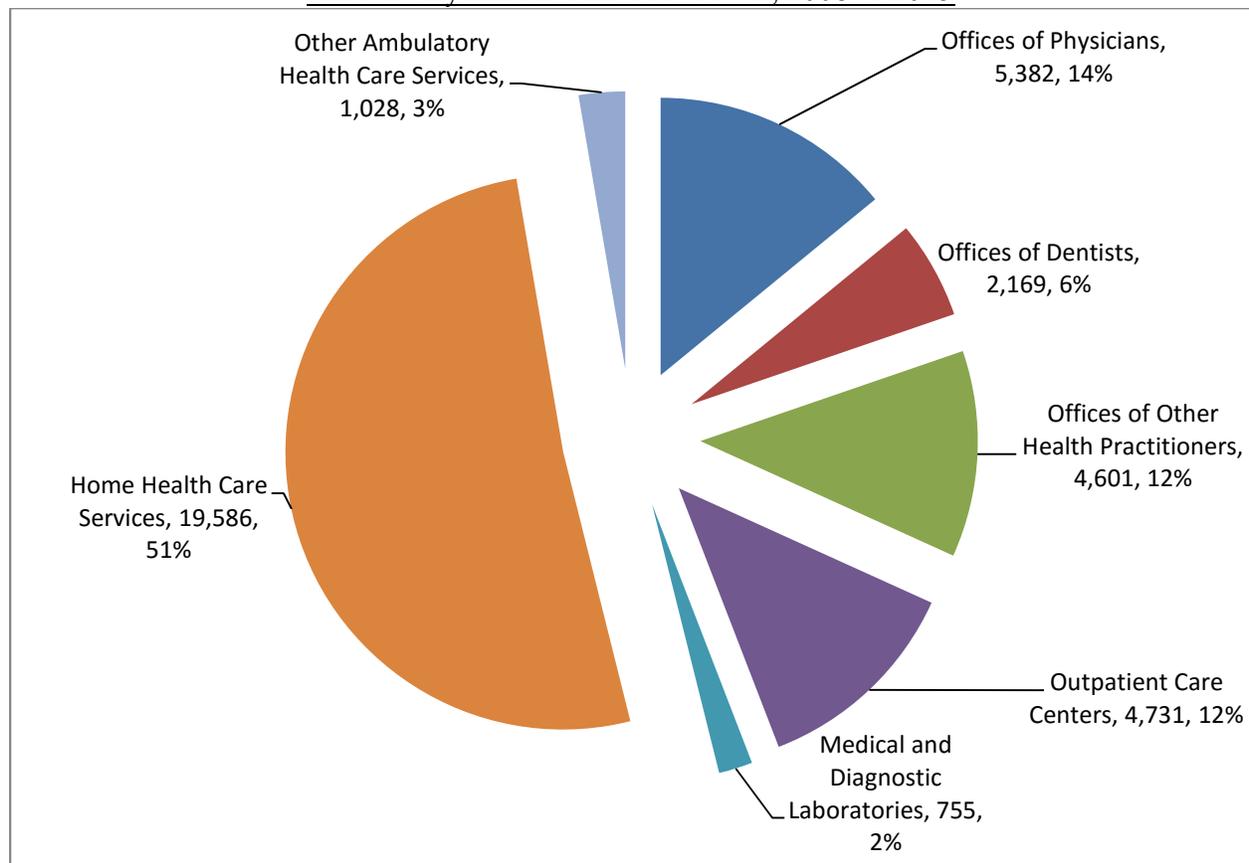
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Other health practitioners expanded their covered payroll employment levels by more than one-third adding 4,600 jobs, while outpatient care centers expanded their payroll employment by one-quarter adding 4,700 positions between 2008 and 2015.

Offices of physicians and dentists both saw covered payroll employment increase by about 10 percent. Together, these two subgroups of the ambulatory care industry added over 7,500 jobs between 2008 and 2015.

The explosive growth in the demand for labor in the state’s home health care industry accounted for one-half of the total increase in ambulatory care employment between 2008 and 2015 and, remarkably, accounted for one in nine private sector jobs created statewide over that period.

Chart 4: Sources of New Job Creation in the Massachusetts Ambulatory Health Care Sub-Sector, 2008 to 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Growth in the ambulatory care industry is illustrative of trends of shifting patient care from the traditional core of hospitals and nursing care facilities to providing patient care in the home or in outpatient care facilities. Much of the new job creation in ambulatory care is in establishments that employ large shares of workers with substantial educational requirements and with quite specific medical and health care knowledge—frequently at the bachelor’s and above level. But the rapidly expanding home health care industry employs a much larger share of workers in health-related jobs that do not require college degrees and related certification for employment.

The findings in Table 5 below show the staffing pattern and wage structure of the two largest ambulatory care industry groups: offices of physicians and home health agencies. The data reveal marked differences in the distribution of employment across major occupations in these industries. The office of physicians’ industry group is dominated by health care practitioner jobs. Half of all workers in this group are employed in these occupations, which generally

Table 5: Occupational Employment and Hourly Wages in Specific Industry Groups of the Ambulatory Health Care Sub-Sector in Massachusetts May 2015

Major Occupations	Offices of Physicians		Home Health Care Agencies	
	Share of Employment	Mean Hourly Wage	Share of Employment	Mean Hourly Wage
Total	100%	\$47.27	100%	\$22.71
Non-Health Professional & Managerial	6%	NA	8%	NA
Health Care Practitioners and Technical Occupations	50%	\$72.13	30%	\$34.50
Health Care Support Occupations	14%	\$17.73	42%	\$13.98
Personal Care and Service Occupations	0%	\$22.10	12%	\$13.20
Office and Administrative Support Occupations	28%	\$19.26	7%	\$19.98

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, Employment and Wages Research Data Files, Massachusetts, May 2015.

require some kind of post-secondary education and pay about \$72.00 per hour. In contrast, the staffing pattern of home health agencies is dominated by health care support and personal care occupations which together account for 54 percent of employment in this industry. Education and training requirements for these occupations are minimal and the hourly wage paid to

employed persons in these occupations average between \$13.00 and \$14.00. The overall average hourly wage rate for all workers in the home health agency industry group of \$22.71 per hour is less than one half the \$47.27 average hourly pay of those employed in the state's offices of physicians industry group.

Rapid growth in employment in the Commonwealth's home health care industry has resulted in heightened demand for workers in the health industry with little or no formal health education or training. It also means that much of the new growth in the ambulatory care industry is in occupations that pay well below the average rate of pay—reflecting the lower education and skill requirements of home health care agencies compared to most other subgroups of the ambulatory care industry.

Hospitals

Hospital organizations provide diagnostic and treatment services—especially physician and nursing services in a facility built to accommodate patients. Hospitals use sophisticated technological tools to assist in the delivery of diagnostic and treatment services. In this section we analyze data for three key elements of the hospital industry in Massachusetts including:

- General medical/surgical hospitals: provide inpatient diagnostic and treatment services to patients with a wide range of medical conditions that require inpatient treatment,
- Psychiatric and substance abuse hospitals: provide diagnostic, treatment and monitoring services to patients who experience mental illness or substance abuse issues. Treatment at these facilities often requires a longer stay than is the case for medical/surgical hospitals. These hospitals emphasize psychiatric, psychological and social work related service provision,
- Specialty hospitals that include rehabilitation hospitals: provide therapeutic services to the physically challenged. Specialty hospitals include cancer hospitals; eye, ear, nose and throat hospitals; obstetrical hospitals and children's hospitals.

General medical/surgical hospitals are by far the largest component of the hospital industry accounting for 87 percent of all hospital employment in Massachusetts.

Medical/surgical hospitals were a very important source of new job creation in Massachusetts during the 2000 to 2008 period and accounted for most of the overall increase in hospital industry employment in the state. Medical/surgical hospitals in the Commonwealth saw

employment rise from 122,300 in 2000 to 153,600 by 2008, representing a net increase of 31,200 positions or 25 percent increase in payroll employment over the eight year period.

The rapid expansion in general medical/surgical hospital employment during this time period created very strong demand for workers in health care practitioner occupations, most notably in the registered nursing fields—where widespread labor supply problems developed during the early part of the decade and persisted through 2008 and beyond. Similar to general medical/surgical hospitals, specialty hospitals in Massachusetts posted large employment gains adding 3,800 jobs and growing by 27 percent between 2000 and 2008. With a staffing pattern and wage structure similar to general medical/surgical hospitals, these specialized hospitals also experienced labor supply problems among skilled health care practitioner occupations.⁵

Psychiatric and substance abuse hospitals saw employment rise by 40 percent between 2000 and 2008 adding 1,200 positions. These organizations employ lower shares of health care practitioners and instead rely more heavily on staff in community and social work related occupations to deliver services.

Table 6: Employment Trends in Specific Industry Groups of the Hospital Sub-Sector in Massachusetts, 2000 to 2008

	2000	2008	Absolute Change	Relative Change
General Medical and Surgical Hospitals	122,334	153,574	31,240	25.5%
Psychiatric & Substance Abuse Hospitals	3,022	4,235	1,213	40.1%
Specialty Hospitals	13,542	17,293	3,751	27.7%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Employment growth in all three subgroups of the state’s hospital industry slowed considerably between 2008 and 2012 compared to the earlier period as the provision of health care services began to shift away from inpatient care toward outpatient care services. General medical/surgical hospitals increased employment by just 3.9 percent over the entire four year period. This rate of employment growth is a marked slowdown to just 1 percent per year, a sharp

⁵ We examine the supply responses by the state’s colleges and universities in a subsequent section of this chapter.

decline from the 3+ percent per year employment growth rate observed in general medical/surgical hospital employment between 2000 and 2008.

This slowdown in general medical/surgical hospital employment growth, combined with expansion in the number of new college graduates entering the health care practitioner workforce from Massachusetts colleges substantially eased the labor supply problems that these institutions experienced in the earlier period, especially in registered nursing occupations. The pace of new job creation in specialty hospitals was 3.3 percent per year between 2008 and 2012, about the same as the very robust 3.4 percent annual pace of new job creation that occurred between 2000 and 2008. Between 2012 and 2015, job creation slowed considerably in both specialty and psychiatric and substance abuse hospitals. In recent years, specialty hospital average employment growth has fallen to 1.3 percent per year, just slightly higher than the growth rate for general medical/surgical hospitals.

Table 7: Employment Trends in Specific Industry Groups of the Hospital Sub-Sector in Massachusetts, 2008 to 2015

2008-2012	2008	2012	Absolute Change	Relative Change
General Medical and Surgical Hospitals	153,574	159,543	5,969	3.9%
Psychiatric & Substance Abuse Hospitals	4,235	4,738	503	11.9%
Specialty Hospitals	17,293	19,586	2,294	13.3%
2012-2015	2012	2015	Absolute Change	Relative Change
General Medical and Surgical Hospitals	159,543	164,688	5,145	3.2%
Psychiatric & Substance Abuse Hospitals	4,738	4,956	218	4.6%
Specialty Hospitals	19,586	20,345	758	3.9%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Staffing in general medical/surgical hospitals in Massachusetts is concentrated in high-skill and high-wage health care practitioner occupations that account for one-half of employment in the industry and have average wages that are just over \$50.00 per hour. These occupations require post-secondary degrees along with certifications of medical knowledge. About one-half of health care practitioners in Massachusetts are registered nurses who earn an average of \$48.00 per hour. Health technologist positions ranging from lab techs to medical records and health informatics technicians account for more than one in four health care professionals in general medical/surgical hospitals. Physicians account for just 5 percent of health care practitioner

employment and therapeutic occupations account for about 7 percent of professional health care employment.

General medical/surgical hospitals also utilize substantial numbers of health care support workers; about 12 percent of the staff works in these health care support jobs primarily in nursing assistant and medical assistant occupations. These occupations pay an average of just over \$12.00 per hour—about one-fourth the hourly wage of health care practitioners. Educational attainment requirements for employment in these occupations do not go beyond the high school diploma level; however, certifications of medical knowledge are required for employment in these positions.

Specialty hospitals in Massachusetts also employ a large proportion of staff (43 percent) in health care practitioner occupations with about one-quarter of these professionals employed in various allied health and therapist occupations and about 44 percent working in registered nurse

**Table 8: Occupational Employment and Hourly Wages in Specific Industry
Groups of the Hospital Sub-Sector in Massachusetts, May 2015**

	General Hospitals		Specialty Hospitals		Psychiatric Hospitals	
	Staffing Pattern	Hourly Wage	Staffing Pattern	Hourly Wage	Staffing Pattern	Hourly Wage
Total	100%	\$34.72	100%	\$34.70	100%	\$26.68
Non-Health Professional & Managerial	15%	NA	8%	NA	42%	NA
Health Care Practitioners & Technicians	50%	\$50.48	43%	\$42.98	30%	\$30.23
Health Care Support	12%	\$12.16	17%	\$16.63	8%	\$14.55
Non-Health Service Occs.	6%	NA	6%	NA	7%	NA
Office and Administrative Support	14%	\$14.12	11%	\$21.35	9%	\$20.74

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, Employment and Wages Research Data Files, Massachusetts, May 2015.

positions. These occupations require both post-secondary degrees and specific certifications of proficiency in the particular health specialty. Hourly wages for those employed in these health professions by specialty hospitals averaged \$43.00 in 2015. Health care support workers accounted for about one in six positions in specialty hospitals, primarily nursing assistants, but also therapist assistants. These staff members had hourly wages that averaged \$16.63 during

2015, a wage equal to 39 percent of the hourly wage rate of health care practitioners employed in this industry.

The occupational composition of the psychiatric hospitals in the state differs markedly from that of both general medical/surgical hospitals and specialty hospitals with much greater utilization of non-health professionals. The staffing pattern in psychiatric hospitals in Massachusetts is dominated by non-health practitioners, primarily community and social worker occupations including mental health and substance abuse counselors and social services assistants. Workers in these occupations account for 42 percent of employment in the industry. Health care practitioners account for about 30 percent of employment in the psychiatric hospital industry and about one half of these individuals are employed as registered nurses.

The overall hourly wages in the psychiatric services industry in the state averaged \$26.68 in 2015, about three-quarters the wage rate paid in the other subgroups of the state's hospital industry. This hourly wage difference is partly the product of differences in the occupational staffing mix, but also lower wages for workers in the same occupation relative to their counterparts employed in general medical/surgical hospitals and specialty hospitals. For example, RNs employed in psychiatric hospitals had a mean hourly wage of \$39.30 in 2015, compared to their counterparts working in specialty hospitals and general medical/surgical hospitals who earned \$45.37 and \$48.13 per hour, respectively.

Nursing and Residential Care

The nursing and residential care subsector in Massachusetts is composed of four very different industry groups; some of these subgroups are intensive employers of staff in health care professions and health care support occupations, while others are primarily staffed by persons working in social and human service occupations with little or no health or medical background. Major subgroups of the industry include:

- The nursing care facilities group of the nursing and residential care subsector in Massachusetts is composed of traditional nursing homes, rest homes and convalescent homes that provide nursing care and rehabilitation service. Care in these facilities is often provided to patients for an extended period of time. This industry also includes skilled nursing facilities. These organizations employ large numbers of registered nurses, nursing assistants and licensed practical nurses and some staff in health therapy occupations.

However, few physicians or workers in other health care diagnostic, treatment or technical occupations are employed by nursing homes.

- Residential mental health facilities include residential care and treatment for patients with mental health and substance abuse conditions. Psychiatric, alcohol and drug treatment residences, halfway houses and residential group homes are included in this subgroup of the nursing and residential care industry.
- Community care facilities for the elderly provide residential and personal care services for the elderly and others unable to fully care for themselves or who do not wish to live independently. These facilities do not provide nursing services and instead provide room and board, supervision and help with activities of daily living.
- Organizations classified as other residential care facilities are primarily engaged in providing residential support to minors including group homes for youth with disabilities, juvenile halfway houses, group foster homes and boot camps for delinquent youth. Few health care staff are employed in this element of the nursing and residential care facility subsector.

While overall employment levels in the industry have increased steadily since 2000, this overall pattern of growth has masked employment declines in the nursing home subgroup of the industry. The traditional nursing home industry in Massachusetts added relatively few new jobs between 2000 and 2008, even as most other subsectors and industry groups within the health care sector added jobs at a robust pace. Payroll employment levels in nursing care facilities increased from about 57,100 to 58,300 between 2000 and 2008, an increase of just 2.1 percent over the eight year period, only about 0.3 percent per year. In contrast, residential mental health facilities and community care facilities for the elderly posted very sharp increases in employment, growing at an annual average rate of 6.0 percent and 4.7 percent, respectively, over that period of time.

Both of these elements of the nursing home and residential care facilities industry employ a majority of their workers in occupations outside of the health care practitioner/technician and health care support fields. Residential mental health providers are employed in non-health professional occupations, primarily community and social service specialists and personal care aides. Staffing in community care facilities is concentrated in food preparation and service

positions, nursing assistant jobs and personal care aide positions. Hourly wages in both community care and residential mental health averaged about \$16.80 during 2015, well below the mean hourly wage rate of \$20.70 earned by workers employed in nursing care facilities.

Table 9: Employment Trends in Specific Industry Groups of the Nursing and Residential Care Sub-Sector in Massachusetts, 2000 to 2008

2000-2008	2000	2008	Absolute Change	Relative Change
Nursing Care Facilities	57,062	58,277	1,215	2.1%
Residential Mental Health Facilities	12,507	18,537	6,031	48.2%
Community Care Facilities for the Elderly	10,198	14,029	3,831	37.6%
Other Residential Care Facilities	5,768	5,541	-226	-3.9%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Beginning in 2008 employment in the Massachusetts nursing care facilities no longer posted any net gains. Between 2008 and 2012, payroll employment among these firms remained largely unchanged averaging just over 58,000 jobs in both years. However, after 2012, employment levels at nursing home facilities declined from 58,100 to about 54,800. This is a loss

Table 10: Employment Trends in Specific Industry Groups of the Nursing and Residential Care Sub-Sector in Massachusetts, 2008 to 2015

2008-2012	2008	2012	Absolute Change	Relative Change
Nursing Care Facilities	58,277	58,075	-202	-0.3%
Residential Mental Health Facilities	18,537	20,567	2,030	11.0%
Community Care Facilities for the Elderly	14,029	16,892	2,863	20.4%
Other Residential Care Facilities	5,541	5,401	-140	-2.5%
2012-2015	2012	2015	Absolute Change	Relative Change
Nursing Care Facilities	58,075	54,774	-3,301	-5.7%
Residential Mental Health Facilities	20,567	22,601	2,034	9.9%
Community Care Facilities for the Elderly	16,892	19,509	2,617	15.5%
Other Residential Care Facilities	5,401	6,801	1,400	25.9%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

of 3,300 jobs, representing a 5.7 percent decline in payroll employment between 2012 and 2015. Residential mental health facilities continued their rapid pace of growth even during the recession/early recovery years of 2008 to 2012, adding 2,000 jobs, representing a relative increase of 11 percent in four years. Community care facilities continued to add very rapidly to their payrolls during this turbulent time. Between 2008 and 2012, employment in these facilities increased by more than 2,800 jobs, representing a 20 percent increase.

The pace of new job growth in both of these industry groups of the nursing and residential care subsector has remained robust in recent years. Residential mental health facilities added more than 2,000 jobs increasing employment by nearly 10 percent between 2012 and 2015. Community care facilities experienced very rapid growth, adding jobs at a 5 percent annual pace since 2012. Organizations primarily providing residential services to minors (these are classified as other residential care facilities) had essentially flat employment levels between 2000 and 2012. However, employment in these facilities has risen sharply in the last three years, adding 1,400 jobs and increasing employment by one-quarter between 2012 and 2015.

Table 11: Occupational Employment and Hourly Wages in Specific Industry Groups of the Nursing and Residential Care Sub-Sector in Massachusetts, May 2015

	Nursing Homes		Residential Mental Health Facilities		Elderly Community Care		Other Residential Care	
	Staffing Pattern	Hourly Wage	Staffing Pattern	Hourly Wage	Staffing Pattern	Hourly Wage	Staffing Pattern	Hourly Wage
Total	100%	\$20.70	100%	\$16.87	100%	\$16.83	100%	\$17.42
Non-Health Professional & Managerial	11%	\$36.29	49%	\$17.93	9%	\$30.38	54%	\$18.03
Health Care Practitioners & Technicians	31%	\$30.45	5%	\$32.75	7%	\$29.36	4%	\$ 28.57
Health Care Support	39%	\$14.38	7%	\$14.41	23%	\$13.60	9%	\$13.19
Non-Health Service Occs.	16%	\$12.87	34%	\$13.25	49%	\$12.76	21%	\$13.83
Office and Administrative Support	5%	\$18.65	3%	\$17.40	7%	\$17.01	5%	\$17.98

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, Employment and Wages Research Data Files, Massachusetts, May 2015.

The shift in employment within the nursing and residential care subsector, away from the more medically oriented nursing homes toward residential care and elderly community care organizations (and more recently other residential care firms) since 2008, suggests declining average wages. While workers in similar occupations employed in different subgroups of the industry are paid roughly the same hourly wage rate, the sharply lower utilization of health care practitioners (primarily registered nurses) in residential mental health (5 percent of the staff), community care (7 percent of the staff) and other residential care (4 percent of the staff) compared to nursing homes (31 percent) results in a reduced overall average wage rate in the nursing and residential care subsector as the structure of the industry itself has been transformed since 2000.

Individual and Family Services

The individual and family services subsector is not generally considered a part of the health care sector of the state or national economy. Our decision to include this industry in our measures of the Massachusetts health care workforce is complicated in that parts of the industry are not closely connected to the delivery of health care services to patients, yet a large and rapidly growing subgroup of the individual and family services industry—services to the elderly and disabled—has become a critical component of strategies to keep persons with various physical, cognitive, emotional and mental infirmities at home in their communities and out of various kinds of inpatient health provider organizations.⁶

The individual and family services subsector is composed of three very distinct industry groups including:

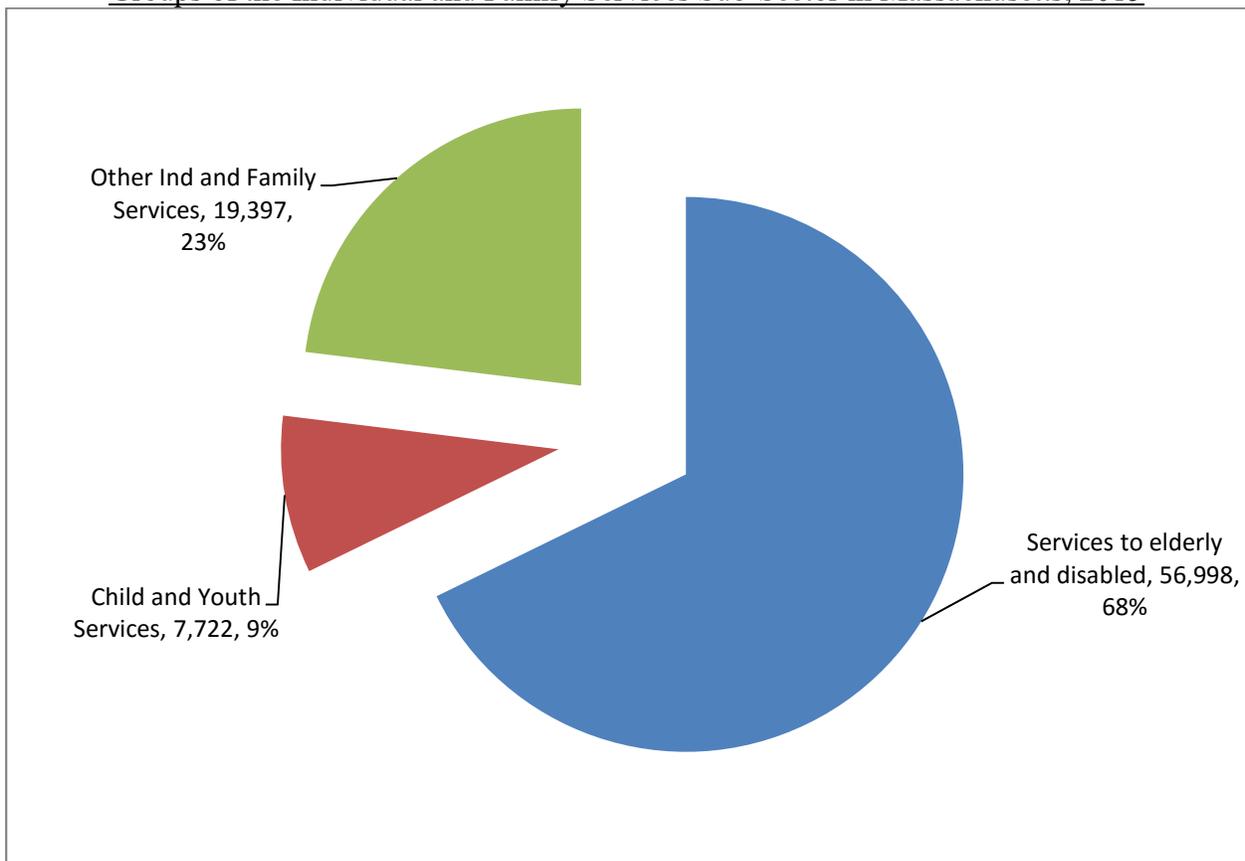
- Services to the elderly and disabled. Workers employed in this element of the individual and family services subsector provide direct care assistance to the elderly and individuals with disabilities in their homes. These services are heavily focused on providing support for activities of daily living. The QCEW program began counting all persons employed as personal care attendants who are financed by MassHealth as employed in the services

⁶ Recent demonstrations by disability rights activists in Massachusetts highlight the close connection between the services to the elderly and disabled and other parts of the health care system, particularly nursing homes: “Disabled Community Protests New Personal care Attendant Mandates, *New England Cable News Network*, November 2, 2016.

for the elderly and persons with disabilities industry group.⁷ This topic is discussed in greater detail below.

- Child and youth services. Workers employed in this subgroup of the individual and family services industry provide assistance to children through the provision of adoption services, child welfare, foster placement and teen outreach services.
- Establishments classified in the residual category of “other” individual and family services include alcohol and drug addiction self-help providers, ex-offender programs, rehabilitation organizations, neighborhood multi-service centers, rape crisis centers and suicide crisis centers.

Chart 5: The Distribution of Annual Average Wage and Salary Employment in Specific Industry Groups of the Individual and Family Services Sub-Sector in Massachusetts, 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

⁷ For a description of the MassHealth Personal Care Attendant Program see: The Personal Care Attendant Quality Home Care Workforce Council, *2014 Performance Review Report to the Governor and the General Court*, undated. <http://www.mass.gov/pca/docs/annual-review-report-2014.pdf>

Firms engaged in the services to the elderly and disabled element of the individual and family services industry provide direct care services—primarily through health care support and personal care aide and attendant workers—to persons who are chronically ill, disabled and who in the absence of this support are at risk of admittance to an inpatient health care facility. During 2015, two-thirds of all individual and family care industry payroll jobs were in establishments that provide these services to the elderly and disabled. Approximately 35,000 personal care attendant positions funded by MassHealth were classified in the services to the elderly and disabled industry group of the individual and family services subsector during 2015, accounting for about 60 percent of all employment in the services to the elderly and disabled industry group of the individual and family services subsector.

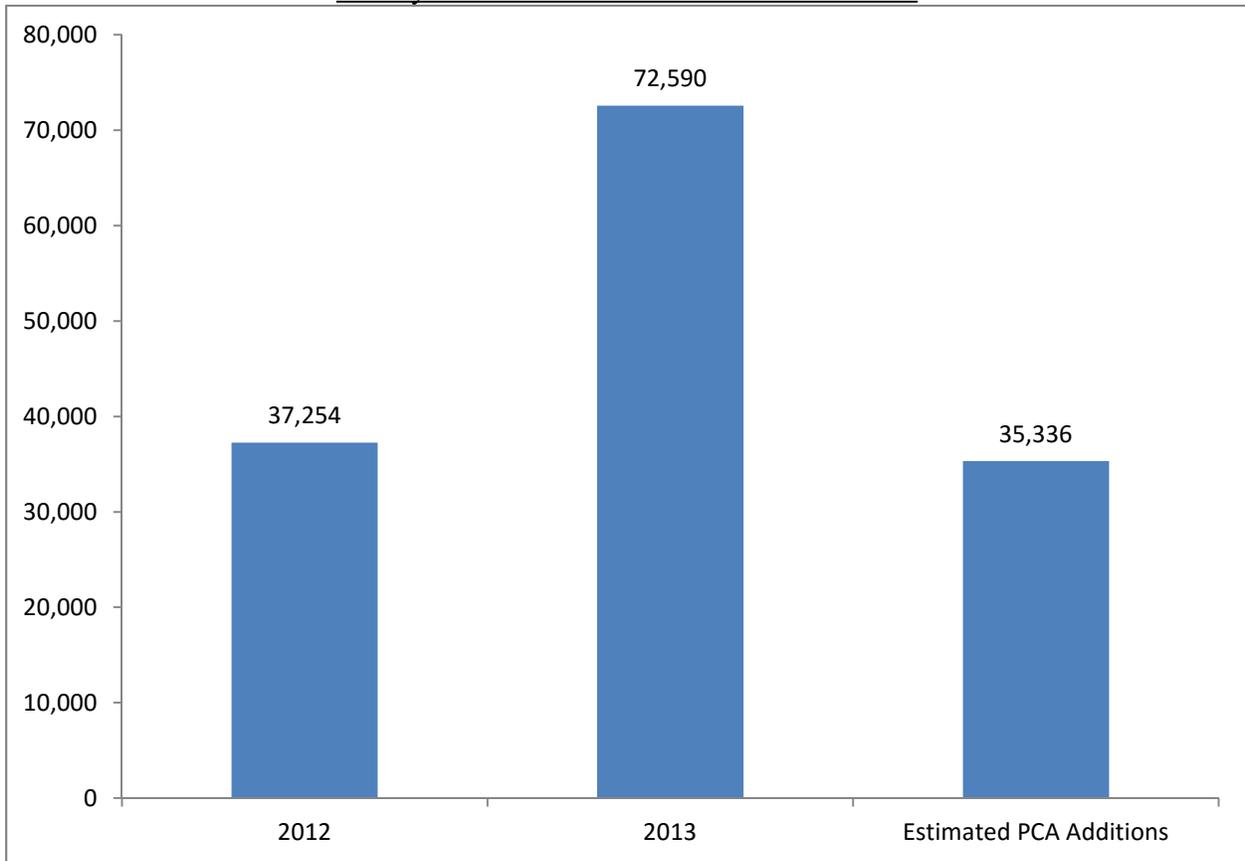
The child and youth services subgroup employs about 7,700 workers (about 9 percent) and “other” individual and family services employs 19,400 staffers, accounting for just under one-quarter of all jobs in the individual and family services industry.

Understanding and properly interpreting employment trends in the individual and family services industry and services to the elderly and disabled element is complicated by a major re-classification of persons employed in the personal care attendant (PCA) programs financed by MassHealth. Historically, personal care attendants were considered domestic workers under the federal Fair Labor Standards Act (FLSA) wage and hour provisions. The categorization of PCAs as domestic workers under the FLSA meant that PCAs were household workers who were excluded from all business establishment surveys of employment conducted by the U.S. Bureau of Labor Statistics—including both of the CES and QCEW statistical programs. This meant that prior to 2013 PCAs funded under Medicaid long-term care provisions were not included in any of the monthly/quarterly job counts produced at either the federal or state level.

In 2012, U.S. Secretary of Labor Thomas Perez changed the status of PCA jobs under provisions of the Fair Labor Standards Act so that they were no longer considered domestic workers who were exempt from wage and hours provisions of the statute. One side effect of the re-classification of these workers under the FLSA is that PCAs were shifted from household-based domestic workers to wage and salary workers within the scope of all BLS establishment surveys. At the state level this meant that MassHealth funded PCAs would be included in the

monthly sample survey jobs measures published by DLWD as well as its quarterly census of jobs counts.

Chart 6: Annual Average Wage and Salary Employment in the Individual and Family Services Sub-Sector in Massachusetts



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program. PCA employment estimates are produced by authors from revised Current Employed Statistics (CES) survey employment data in the state's individual and family services industry for 2001 to 2012 that includes PCA employment.

Personal care attendants financed by the Commonwealth's MassHealth Office of Long Term Services and Supports were not included within the scope of regular wage and salary workers in any BLS establishment survey until the beginning of 2013.⁸ Prior to that time, MassHealth funded PCAs were classified as domestic household workers (similar to live-in

⁸ These workers were excluded from all aggregate industry employment measures, health and social assistance sector employment measures, individual and family services employment measures and services to the elderly and disabled employment counts until January 2013. At that time all of these measures were revised upward to reflect the addition of these PCA positions, causing sizable changes in the employment levels of these measures. For a detailed discussion of the revisions see *CES-National Benchmark Article: BLS Establishment Survey National Estimates Revised to Incorporate March 2013 Benchmarks*, U.S. Bureau of Labor Statistics, undated.

maids or nannies) and not included in the scope of any BLS payroll survey. The monthly employment data produced by the Current Employment Statistics Survey was revised on a retrospective basis back to 2000 to include Mass Health PCA employment each month continuing through the present day. In this way, a historical time series of employment trends within the individual and family services industry in Massachusetts is available. Unfortunately, as we noted earlier, the monthly CES data do not produce more detailed measures of employment for the three specific elements of the individual and family care services industry because of sampling and other methodological considerations.

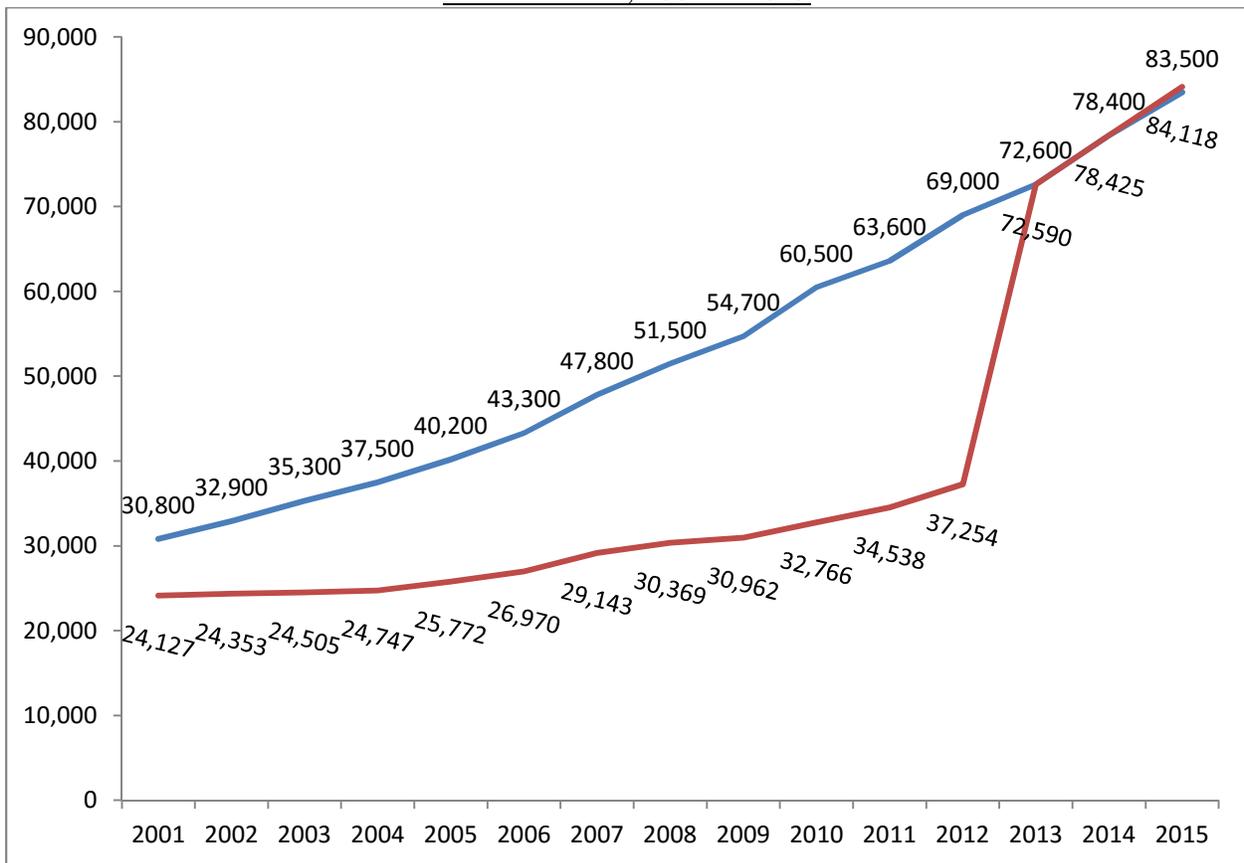
The QCEW began to produce measures of employment that included the state personal care attendant employment in their totals beginning in 2013. Because of the QCEW's 'census' nature, PCA employment data could be added directly into the measure of services to the elderly and disabled. Beginning in the first quarter of 2013 the QCEW statistical program in Massachusetts began including PCAs in its employment measure of services to the elderly and disabled and thus in its measure of employment levels in the individual and family services subsector and health care and social assistance industry measure. Prior to this period, these individuals were not included and no effort was made to revise the state's QCEW measure back to 2000, as was the case for the CES program.

The difference between the two surveys is illustrated in Chart 7 below. This includes annual average employment levels of the individual and family services industry from the CES survey and the QCEW program for Massachusetts from 2001 to 2015. The data reveal that from 2013 to 2015 the CES and QCEW employment measures for the industry are essentially identical. The data from both programs indicate employment in the individual and family services industry increased from about 72,600 during 2013 to 84,000 jobs by 2015, a robust 15 percent rise. However, the chart reveals a large divergence in annual average employment levels in the industry between the two statistical programs prior to 2013. During 2012 the CES program estimated that the individual and family services industry had an annual average wage and salary employment of 69,000, while the QCEW found employment levels in that industry averaged just 37,250.

Underlying the difference between the two measures is that the CES measure was revised back to 2001 to include the state PCA program while the pre-2012 QCEW data were not revised.

This means that we are unable to sort out the employment trends among the three elements of the individual and family services industry prior to 2012 by directly using these data. The CES data do not provide detailed employment information for each industry group of the subsector and while the QCEW does provide the required detail beginning in 2013, it does not revise its prior years' data to reflect PCA employment that existed in the services to the elderly and disabled component of the individual and family services industry.

Chart 7: Comparison of Annual Average Wage and Salary Employment in the Individual and Family Services Sub-Sector from the CES and QCEW Statistical Programs, Massachusetts, 2001 to 2015



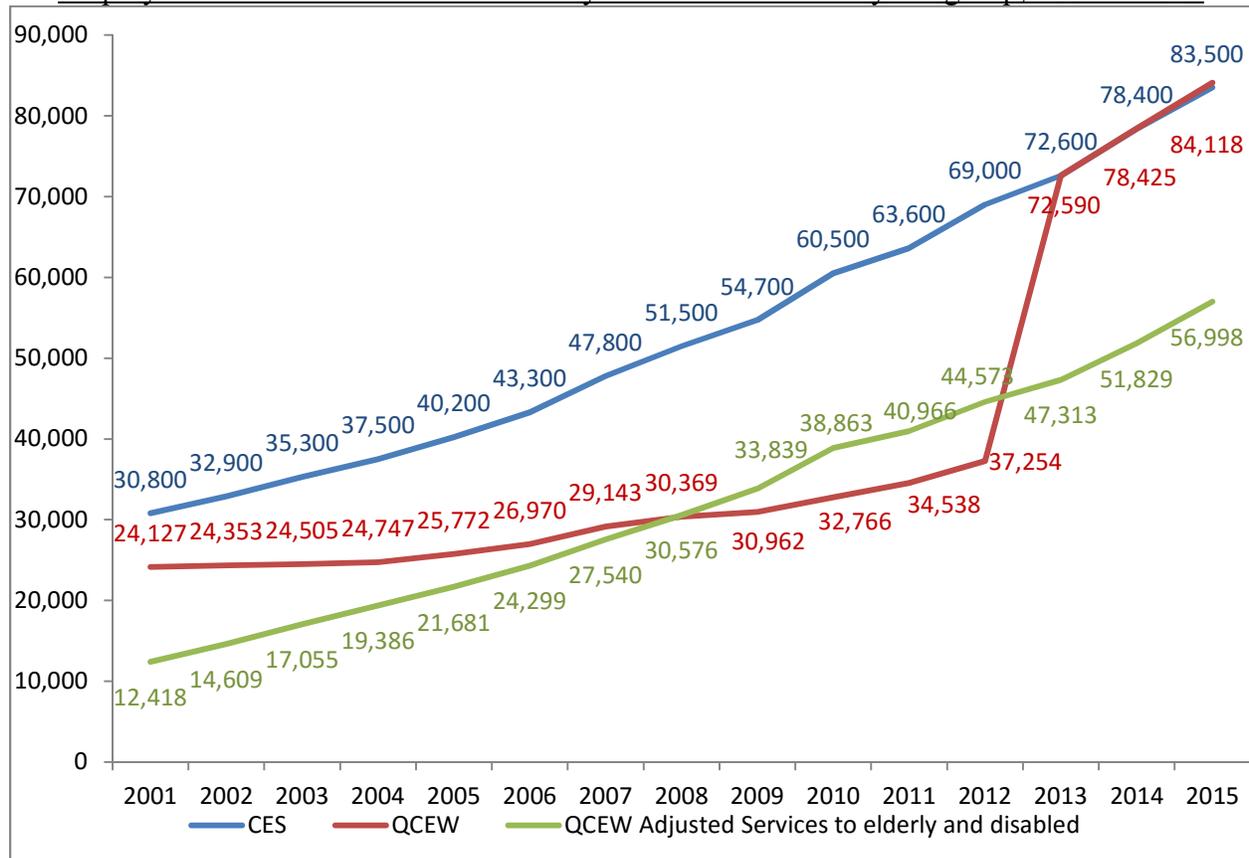
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program, and Current Employment Statistics Survey.

In order to compensate for this data limitation we have developed our own measures of trends in the services to the elderly and disabled at the state level based on our analysis of the historically adjusted CES data and the unadjusted QCEW data. Chart 8 presents our findings on statewide employment trends in the adjusted services to elderly and disabled industry group.⁹

⁹ It is only possible to make this adjustment at the statewide level. No reliable sub-state adjustment is possible.

The data reveal a steady and sharp increase in employment levels among organizations that provide services to the elderly and disabled in Massachusetts.

Chart 8: Comparison of CES and QCEW Annual Average Employment in the Massachusetts Individual and Family Services Sub-Sector and the Adjusted QCEW Annual Average Employment in the Services to the Elderly and Disabled Industry Subgroup, 2001 to 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program, and Current Employment Statistics (CES) Survey. Adjusted QCEW employment in the services to the elderly and disabled sub-sector is based on authors' estimates from revised Current Employed Statistics (CES) survey employment data in the state's individual and family services industry for 2001 to 2012 that includes PCA employment.

Employment levels in the individual and family services industry in Massachusetts rose by 20,700 between 2001 and 2008; nearly all of that increase was associated with explosive growth in its services to the elderly and disabled subgroup. Wage and salary employment in services to the elderly and disabled increased from 12,400 during 2001 to 30,600 by 2008, an increase of more than 18,000 jobs. This health care-related element of the individual and family services industry accounted for 87 percent of the total increase in employment in the state's individual and family services industry between 2001 and 2008. The non-health care components

of the industry—child and youth services and all other individual and family services also grew over this time period, but accounted for a small share of overall growth in the individual and family services industry.

The pace of employment growth among providers of services to the elderly and disabled during 2001 to 2008 was nothing less than stunning, with payroll employment levels rising by 20 percent per year—about 2,600 jobs per year. Few elements of the Commonwealth’s labor market have ever posted such a rapid pace of new job creation over such a sustained time period.

Table 12: Employment Trends in Specific Industry Groups of the Individual and Family Services Sub-Sector in Massachusetts, 2001 to 2008

2001-2008	2001	2008	Absolute Change	Relative Change
Adjusted Services to Elderly and Disabled	12,418	30,576	18,158	146%
Child and Youth Services	4,808	5,910	1,102	23%
All Other Individual and Family Services	13,574	15,014	1,440	11%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Employment levels in establishments providing services to the elderly and disabled continued to grow at a very rapid pace between 2008 and 2012, again accounting for the lion’s share of new job creation in the individual and family services industry. Overall wage and salary employment levels in the individual and family services industry rose by 17,500 jobs with providers of services to the elderly and disabled accounting for 14,000 or 80 percent of this increase. Providers of services to the elderly and disabled saw employment rise by an average of 3,500 jobs per year (up from 2,600 jobs per year during 2001 to 2008), representing an extraordinary pace of 11.5 percent per year.

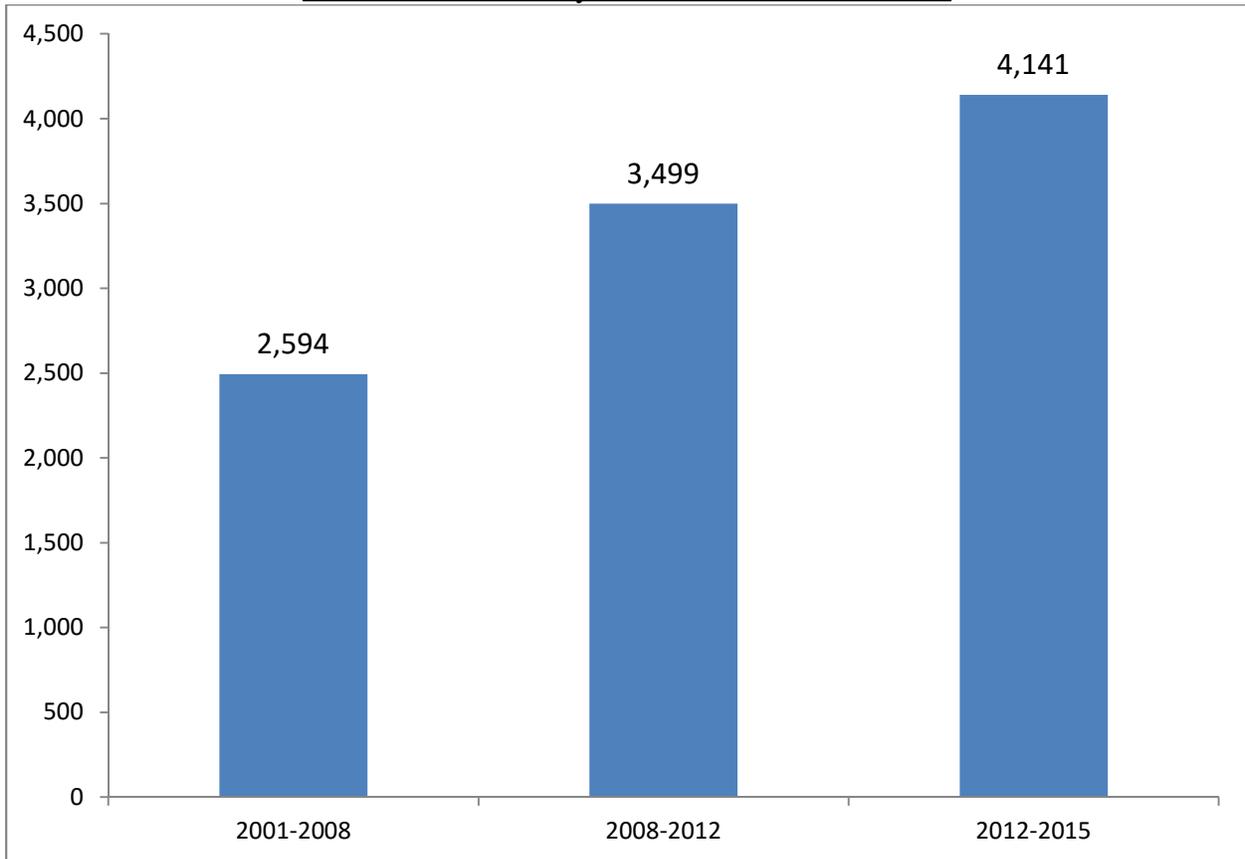
The rapid expansion of wage and salary employment levels among providers of services to the elderly and disabled has continued at a very rapid pace since 2012. Between 2012 and 2015, employment among providers of services to the elderly and disabled increased by 12,400 or 28 percent. Overall employment levels among providers of services to the elderly and disabled grew at an average of 4,100 jobs per year over the last three years, an annual average rate of growth of 9 percent.

Table 13: Employment Trends in Specific Industry Groups of the Individual and Family Services Sub-Sector in Massachusetts, 2008 to 2015

2008-2012	2008	2012	Absolute Change	Relative Change
Adjusted Services to Elderly and Disabled	30,576	44,573	13,997	46%
Child and Youth Services	5,910	7,042	1,132	19%
All Other Individual and Family Services	15,014	17,385	2,371	16%
2012-2015	2012	2015	Absolute Change	Relative Change
Adjusted Services to Elderly and Disabled	44,573	56,998	12,425	28%
Child and Youth Services	7,042	7,722	680	10%
All Other Individual and Family Services	17,385	19,397	2,012	12%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Chart 9: Annual Average Employment Change among Providers of Services to the Elderly and Disabled, 2001 to 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

The overall annual rate of job growth among providers of services to the elderly and disabled has slowed over time from 20 percent per year to 9 percent per year as the absolute employment level has increased. However, it is more important to note that the average number of jobs being created in the services to the elderly and disabled component of the individual and family services industry has accelerated over time. During 2001 to 2008, these service providers added about 2,500 jobs per year, rising to 3,500 per year during the 2008 to 2012 period. In recent years these organizations have increased their payroll employment levels by more than 4,100 jobs per year, making it among the most important and consistent sources of new job creation in the state.

Information about the occupational distribution of employment and mean hourly wage distribution across those occupations in the individual and family services industry and its services to the elderly and disabled element are provided in Table 14. It is important to note that data on the occupational structure of employment in the services to the elderly and disabled industry group underestimates employment levels in the non-health service occupations, especially employment in personal care aide and attendant positions. While both the CES and QCEW data were able to add the state financed PCA workers into their employment measures, the Occupational Employment Statistics (OES) survey program has not yet completed the

Table 14: Occupational Employment and Hourly Wages in Specific Industry Groups of the Individual and Family Services Sub-Sector in Massachusetts, May 2015

	Child and All Other Individual and Family Services		Services to Elderly and Disabled		Adjusted Services to Elderly and Disabled
	Staffing Pattern	Hourly Wage	Staffing Pattern	Hourly Wage	Staffing Pattern
Total	100.0%	NA	100.0%	\$18.04	100.0%
Non-Health Professional & Managerial	59.0%	NA	24.0%	\$20.21	11.0%
Health Care Practitioners & Technicians	6.1%	NA	7.9%	\$29.41	3.6%
Health Care Support	3.2%	NA	12.0%	\$13.31	5.5%
Non-Health Service Occs. Office and Administrative Support	19.8%	NA	50.0%	\$13.53	77.1%
	12.0%	NA	6.0%	\$17.55	2.8%

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, Employment and Wages Research Data Files, Massachusetts, May 2015.

process of including state financed PCA employment levels into its occupational employment measures for the services to the elderly and disabled subgroup of the individual and family services subsector. This means that perhaps as many as 35,000 to 38,000 PCA positions have not been included in the OES staffing pattern data for Massachusetts included in Table 14. If we were to adjust these data, we would find that instead of one-half of services to the elderly and disabled organizations staff concentrated in non-health service occupations, perhaps as much of 75 percent of these workers would be concentrated in non-health service occupations, primarily as PCAs.

Relatively low hourly wages are the hallmark of work in the services to the elderly and disabled industry. At the time of the OES findings for 2015, wages in the industry averaged just \$18.04. Non-health professionals and managers who accounted for about 24 percent of workers had mean hourly wages of \$20.21, but non-health service occupations, largely made up of personal care attendants and aides, had average wages of just \$13.53 per hour. Health care support workers providing services to the elderly and disabled had average hourly pay of \$13.31 during 2015.

These findings reveal that the rapid growth in employment among providers of services to the elderly and disabled is closely associated with growth in low wage occupations. The most conservative estimate implies that half of the job growth among providers of services to the elderly and disabled was concentrated in jobs near the bottom of the state's overall hourly wage distribution during 2015.

Changing Nature of Job Growth

The health care delivery system consists of fifteen specific industry subgroups of the overall health care and social assistance sector that are listed in Table 15 below. Only one of these industries is not classified by the Bureau of Labor Statistics as part of the health care sector which includes ambulatory health care, hospitals, and nursing and residential care industry subsectors. We add services to the elderly and persons with disabilities to this classification because of the central role that persons employed in that industry group play in helping the elderly and individuals with disabilities avoid admittance to health care facilities as either acute or chronic patients. Personal care aides and attendants, home health aides, and others that work in this industry group are front-line staff charged with the task of reducing the pace of growth of

health care costs in Massachusetts by avoiding the institutionalization of clients that they assist. As we discuss later in this chapter, their role in cost containment and health care delivery is likely to grow at a very rapid pace over the next fifteen to twenty years.

The data provided in Table 15 examine the annual average rate of change in each of the fifteen components of the Commonwealth's health care system over three time periods: 2000 to 2008, a period of rapid growth in health care employment, 2008 to 2012, a period of recession and slow recovery in the state and a sharp slowdown in the pace of growth in key elements of the health care sector, and 2012 to 2015, the post-Chapter 224 period and a time of accelerated job creation in the Commonwealth.

During 2000 to 2008 a substantial share of new job creation was in industries that served inpatients at acute or chronic care facilities. General medical/surgical hospital employment added a very large number of positions to its payroll employment levels between 2000 and 2008. Overall employment levels in the state's general medical/surgical hospitals increased by 31,200, growing at a very robust annual pace of job growth—especially during a period of time when overall employment levels fell drastically during the dot.com recession and failed to recover to 2000 levels by 2008 as the state entered into the Great Recession. Psychiatric hospitals also grew at this time with employment rising by 1,200 jobs or 5 percent per year, and specialty hospitals saw employment grow by 3.5 percent per year adding 3,700 jobs over the period.

Nursing homes did not add many new jobs, growing by just 0.3 percent per year, but residential mental health facilities saw employment rise by a very rapid annual pace of 6 percent, adding 6,000 jobs between 2000 and 2008. Community care facilities including assisted living organizations also grew at a strong average rate of 4.7 percent per year, adding more than 3,800 jobs between 2000 and 2008.

Health care organizations that served patients on an outpatient basis also added large numbers of workers to their payroll during the 2000 to 2008 period. Services to the elderly and disabled led this rise adding 18,100 jobs and growing by an extraordinary 20 percent per year over the period. Offices of physicians added 5,500 jobs, growing at a solid 1.5 percent annual rate. Home health care service providers saw their payrolls rise by 4,800 jobs between 2000 and 2008, with a robust annual average growth rate of 3.1 percent. But home health care agency employment was yet to achieve the extraordinary growth experienced since 2008.

Led by strong gains in medical/surgical hospitals and residential mental health facilities, inpatient health organizations were the dominant source of new job creation in the health care sector before 2008. In-patient organizations added more than 47,200 jobs to their payrolls, while outpatient organizations added 38,300 jobs. However, after 2008, the role of inpatient organizations as a source of job growth in the health care sector was greatly diminished.

Table 15: Total Employment Change and Annual Average Rate of Change among the Fifteen Specific Industry Groups of the Massachusetts Health Care Sector, 2000 to 2015

	2000-2008		2008-2012		2012-2015	
	Total Net Job Change	Annual Average Percent Change	Total Net Job Change	Annual Average Percent Change	Total Net Job Change	Annual Average Percent Change
Offices of Physicians	5,527	1.5%	3,587	1.7%	1,796	1.1%
Offices of Dentists	3,544	2.5%	729	0.9%	1,440	2.1%
Offices of Other Health Practitioners	2,829	3.5%	2,465	4.7%	2,136	4.6%
Outpatient Care Centers	1,447	1.1%	2,993	4.0%	1,737	2.7%
Medical and Diagnostic Laboratories	1,196	4.1%	199	1.0%	556	3.7%
Home Health Care Services	4,883	3.1%	8,423	8.6%	11,163	11.3%
Other Ambulatory Health Care Services	784	1.6%	793	2.8%	234	1.0%
General Medical and Surgical Hospitals	31,240	3.2%	5,969	1.0%	5,145	1.1%
Psychiatric & Substance Abuse Hospitals	1,213	5.0%	503	3.0%	218	1.5%
Specialty Hospitals	3,751	3.5%	2,294	3.3%	758	1.3%
Nursing Care Facilities	1,215	0.3%	-202	-0.1%	-3,301	-1.9%
Residential Mental Health Facilities	6,031	6.0%	2,030	2.8%	2,034	3.3%
Community Care Facility for the Elderly	3,831	4.7%	2,863	5.1%	2,617	5.2%
Other Residential Care Facilities	-226	-0.5%	-140	-0.6%	1,400	8.6%
Adjusted Services to Elderly and Disabled	18,158	20.9%	13,997	11.5%	12,425	9.3%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

Employment levels in home health care agencies began to explode in 2008. The average rate of new job growth among home health care agencies in the state accelerated to 8.6 percent per year between 2008 and 2012. These agencies added 8,400 jobs between 2008 and 2012.

Employment levels in the services to the elderly and disabled element continued their extraordinary expansion, adding 14,000 jobs in just four years and growing at an average rate of over 11 percent per year between 2008 and 2012. Outpatient care centers also accelerated their pace of growth adding 3,000 jobs and growing at a 6 percent per year rate during the four-year period. Offices of other practitioners that include many therapeutic specialist firms added 2,400 jobs and increased payroll employment at a very robust 4.7 percent per year rate between 2008 and 2012.

Employment growth in general medical/surgical hospitals slowed considerably to a 1 percent annual average rate of growth per year during the 2008 to 2012 period, a sharp reduction from its pace of growth between 2000 and 2008. However, employment growth was still substantial with general medical/surgical hospitals adding about 6,000 jobs over the four-year period. Specialty hospital employment growth remained robust adding 2,300 jobs and growing at an annual pace of 3.3 percent. Psychiatric hospitals added about 500 jobs between 2008 and 2012.

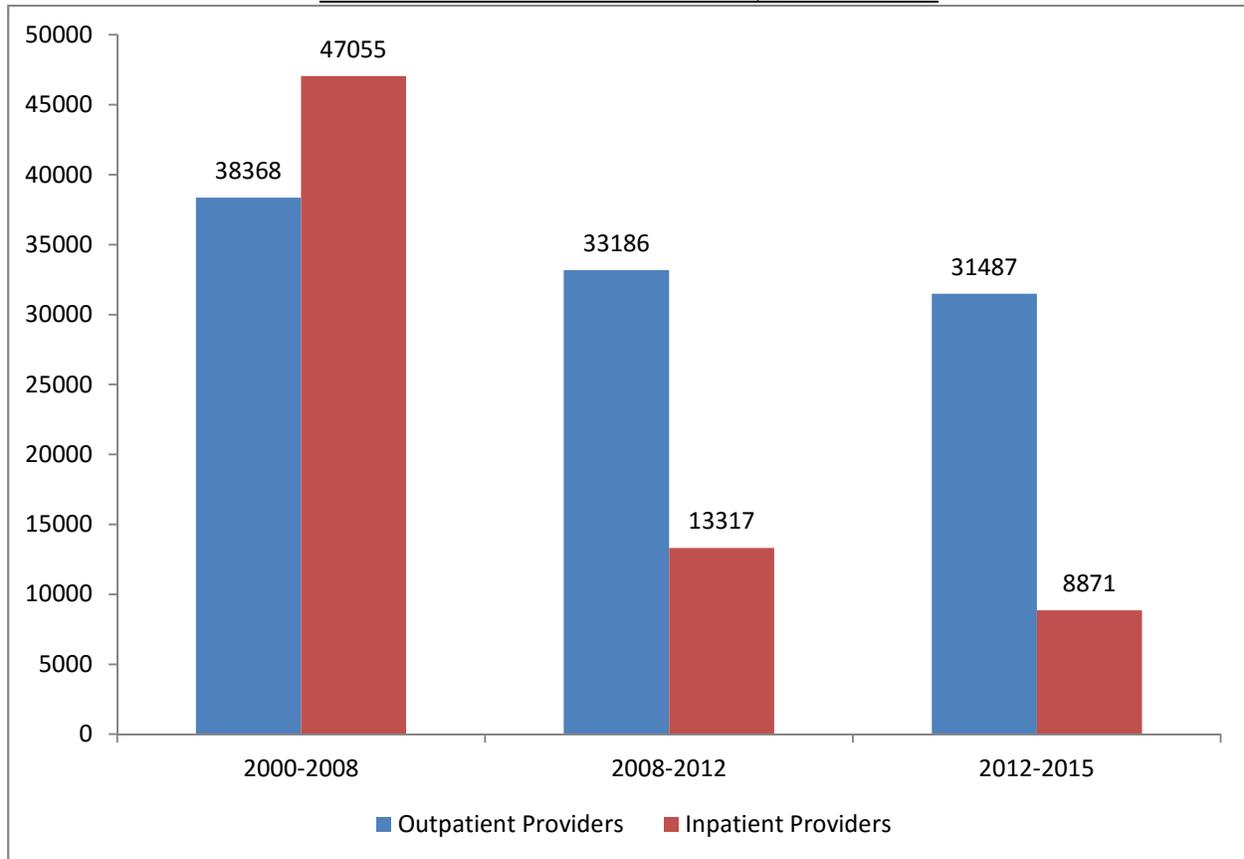
As hospital employment slowed, the nursing home industry experienced a small level of job loss between 2008 and 2012. This was very unusual during a period of strong overall job creation among health care service providers. Payroll employment in the nursing home industry declined by about 200 jobs, a tiny reduction relative to the base of 58,200 workers in the industry during 2008. However, this counter-trend job loss foreshadowed much larger employment declines among nursing home providers after 2012.

Community care facilities for the elderly saw their employment levels rise by 2,800 jobs, growing at a very strong 5 percent annual average rate. Residential mental health facilities experienced a job gain of 2,000 growing by a solid 2.7 percent per year during the 2008 to 2012 period.

Led by strong gains among home health agencies and providers of services to the elderly and disabled, outpatient service providers became the overwhelmingly dominant source of job creation in the state's health care sector. Outpatient service providers added 32,000 jobs in just four years between 2008 and 2012, compared to 13,000 job gains among inpatient providers. Outpatient providers created 2.4 jobs for every one job created by inpatient providers during

2008 to 2012, a sharp reversal from the earlier period when inpatient providers generated 1.2 jobs for every one job created by outpatient organizations.

Chart 10: Employment Change among Inpatient and Outpatient Providers in the Massachusetts Health Care Sector, 2000 to 2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program.

The shift of job creation from inpatient to outpatient health care providers has accelerated in recent years. Despite a slowing in the pace of new job creation in some parts of the ambulatory care industry, including physicians' offices and outpatient care centers, the pace of new job creation among home health agency providers accelerated further, from an already very high rate of job creation of 8 percent per year in the 2008 to 2012 period. Between 2012 and 2015 home health agencies added 11,100 jobs, expanding their payroll employment levels by a remarkable 11 percent per year. Providers of services to the elderly and disabled continued to see remarkable growth in employment levels each year between 2012 and 2015. Payroll employment levels among these providers rose by 12,400 jobs, rising at an annual rate of 9.3 percent, continuing its extraordinary pace of job creation.

While outpatient provider employment levels continued along a high growth pathway, employment growth among inpatient providers continued to slow. General medical/surgical hospitals continued to grow by about 1 percent per year between 2012 and 2015 adding 6,000 jobs over the three year period, but the pace of growth for both psychiatric and substance abuse hospitals and for specialty hospitals slowed, together adding about 1,000 jobs. Residential mental health facilities added about 2,000 jobs and community care facilities for the elderly continued its strong growth adding 2,600 jobs and growing at a 5 percent annual pace. However, nursing home employment declined by 3,300 jobs as nursing home shutdowns forced widespread layoffs in the industry subsector.

Inpatient health care service providers added a total of just 7,500 jobs between 2012 and 2015, while outpatient providers, fueled by extraordinary growth among home health agency providers and providers of services to the elderly and disabled, added 31,800 jobs to wage and salary employment levels in the Commonwealth between 2012 and 2015. For every one job created by inpatient health care service providers, outpatient organizations created 4.2 jobs, a dramatic reversal in the nature of health care employment growth in the state. This reversal has had important impacts on the skill requirements and wages of workers in the health care sector. Increasingly, health care job growth has been concentrated in low skill, low wage occupations, especially in home health care, personal care aide and attendant, nursing aide and community health worker/social and human service assistant occupations. However, the growth in hospital employment and key parts of the ambulatory care industry has meant strong growth in the demand for staff in occupations that require very high levels of educational attainment and intensive understanding of various aspects of medical knowledge.

Table 16 provides a rank ordering of the state's 15 health care provider industry subgroups based on their overall average hourly wage for workers across all occupations in each element. It also connects these wage levels to the relative contribution of each element to overall health care sector employment growth during the three time periods we have examined in this chapter thus far. For example, the highest wage in the state's health care industry is in offices of physicians with an average hourly wage of \$47.27 during 2015, an hourly wage level that is about \$19.00 higher than the overall state average hourly wage. Offices of physicians accounted for just 4 percent of overall new job growth in the Massachusetts health care delivery system between 2012 and 2015, down from an 8 percent share during 2008 to 2012.

The most striking finding with respect to wage developments is the sharp reduction in the pace of new job creation among the relatively high wage general medical/surgical hospital providers. Hourly wages in general medical/surgical hospitals of \$34.72 were 22 percent higher than the average wage for all occupations in the state during 2015. During the 2000 to 2008 period more than one in three new health care jobs were generated in high wage general medical/surgical hospitals. The only ‘above average hourly wage’ element of the health care delivery system that increased its share of overall health care job creation between 2000 to 2008 and 2008 to 2015 was the offices of other health care practitioners subgroup. Other health care practitioners including mental health practitioners and physical, occupational, and speech therapists increased their share of employment growth in the overall health care sector from 3 percent during 2000 to 2008, to 5 percent during 2008 to 2012 and 2012 to 2015. Mean hourly wages among organizations providing these diagnostic and therapeutic services were \$28.38 during 2015, about the same as the overall prevailing wage across all occupations in the state at that time.

The most important sources of new job creation in the health care sector in Massachusetts in recent years have been concentrated in the subgroups of the health care system that paid below average hourly wages. Home health agencies have experienced very rapid growth in recent years but had mean hourly wages that were 20 percent below the average wage level for all occupations in the state. Home health agencies accounted for just 6 percent of all new health care jobs created in Massachusetts between 2000 and 2008, but by the 2012 to 2015 period these home health care providers generated more than one-quarter of all new health care positions in the Commonwealth.

The services to the elderly and disabled element of the state’s health care sector has consistently accounted for a large share of all new health care jobs created in the state. With a staffing structure dominated by personal care aides and attendants, mean wages among these service providers are relatively low. During 2015, providers of services to the elderly and disabled had mean hourly wages of \$18.04, a wage rate that was more than one-third below the average wage rate of the state. Services to the elderly and disabled providers accounted for 21 percent of all health care sector jobs created during the 2000 to 2008 period, but this proportion increased to 31 percent during the 2012 to 2015 period.

Table 16: Mean Hourly Wage Rates and Contributions to Health Care Employment Growth among the Fifteen Specific Industry Subgroups of the Massachusetts Health Care Sector

	2015 Mean Hourly Wage	Percent Contribution to Overall Health Care Employment Growth		
		2000 to 2008	2008 to 2012	2012 to 2015
Health Care Providers				
Offices of Physicians	\$47.27	6%	8%	4%
Offices of Dentists	\$36.89	4%	2%	4%
General Medical and Surgical Hospitals	\$34.72	37%	13%	13%
Specialty Hospitals (except Psychiatric and Substance Abuse)	\$34.70	4%	5%	2%
Outpatient Care Centers	\$31.57	2%	6%	4%
Medical and Diagnostic Laboratories	\$29.41	1%	0%	1%
Offices of Other Health Practitioners	\$28.38	3%	5%	5%
Total, All Occupations, Massachusetts	\$28.37			
Psychiatric and Substance Abuse Hospitals	\$26.68	1%	1%	1%
Home Health Care Services	\$22.71	6%	18%	28%
Other Ambulatory Health Care Services	\$21.88	1%	2%	1%
Nursing Care Facilities (Skilled Nursing Facilities)	\$20.70	1%	0%	-8%
Services for the Elderly and Persons with Disabilities	\$18.04	21%	30%	31%
Other Residential Care Facilities	\$17.42	0%	0%	3%
Residential Mental Health Facilities	\$16.87	7%	4%	5%
Community Care Facilities for the Elderly	\$16.83	4%	6%	6%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program and Occupational Employment Statistics, Employment and Wages Research Data Files, Massachusetts, May 2015.

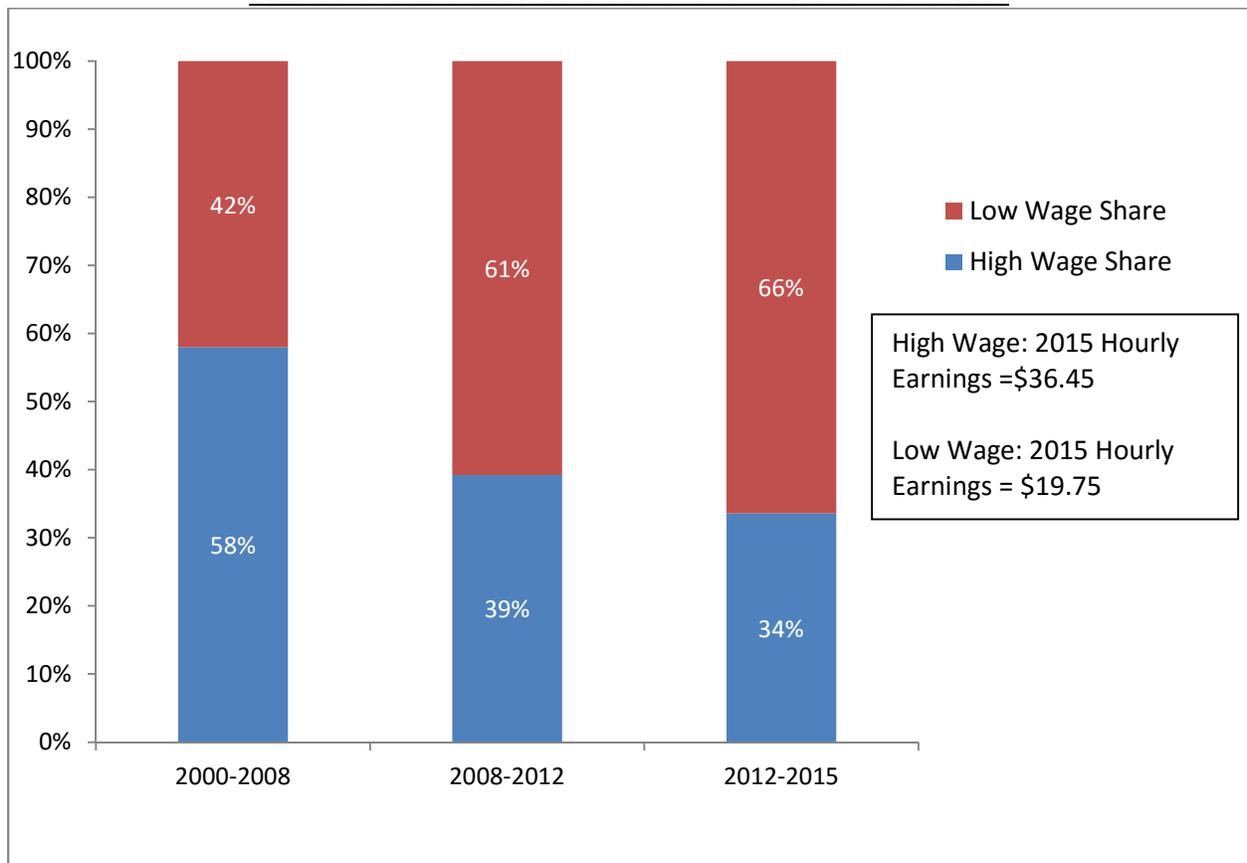
Large reductions in the share of job growth in the state’s general medical/surgical hospitals after 2008, combined with rapid growth in the share of new jobs created by home health care agencies and providers of care to the elderly and disabled, has resulted in an important change in the nature of work and the wages associated with that work in the state’s health care delivery system.¹⁰

High wage elements of the health care services sector accounted for 58 percent of the net increase in health care service provider employment in Massachusetts during the 2000 to 2008 period. However, this share of employment growth fell to 39 percent during the 2008 to 2012

¹⁰ For an examination of changes in the nature of work in the state’s health care delivery system see: Special Topics Report, September 2016, op. cit.

period and further down to just 34 percent by the 2012 to 2015 period. This shift in the nature of new job creation within the health care sector means that the low wage sector of the health care delivery system, which pays workers an average hourly wage of \$19.75, has in recent years, created two new jobs for every job created in the high wage sector where hourly pay averaged \$36.45 during 2015.

Chart 11: Share of New Job Creation in High Wage and Low Wage Components of the Massachusetts Health Care Sector over Three Time Periods



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages Statistics Program and Occupational Employment Statistics, Employment and Wages Research Data Files, Massachusetts, May 2015.

It is important to note that the high wage elements of the state’s health care delivery system continue to add jobs (and are likely to do so for the foreseeable future) but that the overall nature of job growth in the health care sector has clearly shifted to low wage occupations. At the margin we can expect that much of the growth in the state’s health care industry will be in low wage, low skill requirement occupations. We expect that demand for personal care aides and attendants and home health aides, along with community health workers and related social and

human service assistants will be a leading source of new job creation in the state's health care system. Indeed, demographic change and the close association of disabling conditions with aging, reductions in the ability of families to provide care to those in need, cost containment efforts by federal and state laws and regulations, along with potent private sector efforts to curb health care costs, and consumer desires for services at home (and avoiding hospital and nursing home admission), all suggest a continued increase in the demand for workers in these three occupations. Our review of the information available suggests that about one in ten new jobs created in Massachusetts over the next ten years will be in home health aide, personal care aide and attendant, and community health worker/social service occupations.¹¹

The Geographic Distribution of Health Care Industry Employment

Changes in the laws and regulations that govern various parts of the state's health care industry will have considerably different impacts on the workforce of various regions across the Commonwealth. Regulatory activity aimed at reducing the use of hospitals and nursing homes may have less of an impact on the health care workforce of a region where ambulatory care organizations and individual and family services are more important sources of health care employment and earnings. Conversely, such changes may exert powerful adverse employment and earnings impacts in regions of the state where these organizations are concentrated.

In our baseline study we examined the geographic distribution and differences in the regional industry mix of the state's health care industry.¹² In order to accomplish this we used a slightly modified version of the seven regions adopted by the Workforce Competitiveness Trust Fund (WCTF) Advisory Committee. This has been used by Commonwealth Corporation since 2007 to allocate employment and training program grant funding from the Workforce Competitiveness Trust Fund. The regions are composed of workforce investment board regional jurisdictions that are used to manage local workforce development program activities. We have modified the WCTF regional definition by breaking the Boston Metropolitan region into two separate regions, sorting out the City of Boston proper from its surrounding suburban communities. We chose to separate Boston from the suburbs since the city's medical institutions

¹¹ See: Special Topics Report, September 2016, op. cit.

¹² *Health Care Employment, Structure, and Trends in Massachusetts*, Chapter 224 Baseline Study, Prepared by Commonwealth Corporation and the Center for Labor Markets and Policy, Drexel University, July 2014.

play a national and international role in health care delivery and perhaps more practically because 22 percent of all health care employment in the state was located in the City of Boston during 2012. In addition, the industrial and occupational composition of these jobs is significantly different from those in the rest of the state. We use these same regions below to examine sub-state trends since 2012 in health care industry employment.

The health care sector accounts for a substantial share of total covered employment not only statewide, but also within each of the major regions of the Commonwealth. While the data showing reclassification of home health workers from household domestic workers to payroll employment workers is available at the statewide level, at the time of this study the data are not available to verify how this reclassification has affected each sub-state region. Therefore, in this section we will look only at the three traditional sub-sectors of the health care industry that does not include individual and family services employment. This more conservative measure of health care sector employment continues to reveal the large role that the health care industry played in generating economic stability since the Great Recession across the state.

Perhaps the most notable feature of the health care industry is the central role it plays in the overall structure of employment in each region. At the state level, the Massachusetts health care industry accounts for about one in six covered jobs. In 2012, we found high concentrations of health care employment in Boston and western Massachusetts. In Boston more than one in five jobs located in the city were in the health care industries with similarly high proportions found in Berkshire County and in the Pioneer Valley (consisting of Franklin, Hampden and Hampshire counties). With the exception of Boston suburbs, the remaining regions of the state all had at least one in six of their payroll jobs concentrated in the health care industry. In the suburban communities surrounding Boston (composed of the Metro North and Metro South/West workforce regions) about one in eight payroll jobs were in the area's health care industry.¹³

The data in Table 17 reveal that in 2015 more than 90,300 hospital jobs were in facilities located in the City of Boston, equal to about 46 percent of overall hospital employment in the state. Ambulatory care jobs located in the City of Boston accounted for nearly 12 percent of the

¹³ Ibid.

state's employment level in that industry. Nursing and residential care facilities are much less likely to be found in the City of Boston than in other regions of the state, with about 5.6 percent of all nursing and residential care employment found in the city. Ambulatory care and nursing and residential care employment were primarily concentrated in Boston Suburbs, Northeast and Southeast regions of the state. Even in other regions of the state, these health care sub-sectors accounted for thousands of jobs.

Table 17: Distribution of Health Care Industry Employment by Sub-sector and Geographic Region of Massachusetts, 2015

Regions	Ambulatory Care		Hospitals		Nursing and Residential Care	
	Number	Percent Distribution	Number	Percent Distribution	Number	Percent Distribution
Berkshire	3,180	1.7%	*	0.0%	3,939	3.8%
Pioneer Valley	20,044	11.0%	15,146	7.7%	12,087	11.6%
Central Mass	20,233	11.1%	18,939	9.7%	14,976	14.4%
Northeast	31,564	17.3%	17,689	9.0%	16,884	16.2%
City of Boston	21,443	11.7%	90,343	46.1%	5,789	5.6%
Boston Suburbs	45,824	25.1%	31,159	15.9%	23,715	22.8%
Southeast	33,922	18.6%	18,425	9.4%	22,508	21.6%
Cape & Islands	6,355	3.5%	4,480	2.3%	4,310	4.1%
Total	182,565	100.0%	196,180	100.0%	104,207	100.0%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, CSV State Files, 2015
<http://www.bls.gov/cew/>

Note: Employment growth rate for the Hospitals sub-sector in the Berkshire Region is not available, as data for 2015 were suppressed.

Variations in the distribution of employment in the specific health care industries across the state mean that the relative importance of specific industry components of the health care sector in the individual regional labor markets will also vary considerably. The specifics of the mix of health care industry sub-sectors in a region exert a strong impact on the characteristics of employment in the area's overall health care industry. Staffing patterns, ability, knowledge and skill requirements, educational attainment, occupational licensing, annual pay, weeks and hours of work are just a few of the most important factors that vary considerably across specific parts of the health care industry. Indeed, the pace of job growth within a region's health care industry (and a potentially important source of overall regional job creation) will vary considerably depending on the mix of health care sub-sector employment found in a given region.

We discuss in another paper how the dramatic increase in home health care and individual and family services industry sub-sector will affect the local labor market.¹⁴ For regions like the City of Boston, where hospital employment still makes up the largest share of health care industry employment, the characteristics of health care jobs will continue to be dominated by employment found in hospital staffing structures, which tend to have substantial education and training requirements and pay above-average wages. In contrast, regions with above-average shares of employment in the nursing and residential care industry sub-sector will have larger shares of jobs with fewer education and training requirements that pay below-average wages compared to some other elements of the health care industry. Areas with high shares of nursing and residential care employment in their health care industry will have somewhat different education and training requirements for their workforce and the wages and rate of net new job creation will differ from those areas where other kinds of health care service providers dominate the health care industry landscape.

As noted in our previous report,¹⁵ the hospital sub-sector and nursing and residential care sub-sector drove employment growth in the health care industry across the state prior to 2012. Since then, ambulatory care and individual and family services (not shown here) have driven health care employment growth.¹⁶

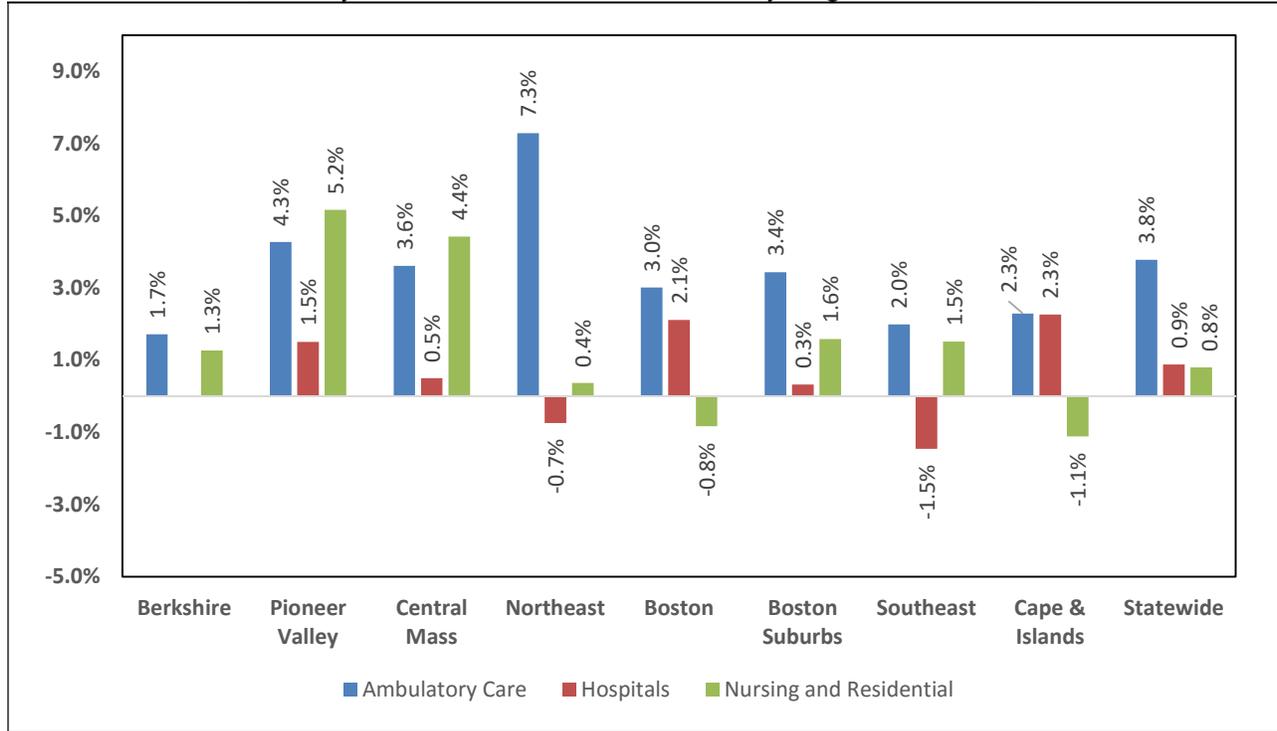
Chart 12 presents the varying rates of annual average growth in health care sub-sectors across sub-state regions between 2012 and 2015. Two sub-state regions, Pioneer Valley and the Northeast had faster growth in ambulatory care (4.3 percent and 7.3 percent respectively) than the statewide average (3.8 percent). The Pioneer Valley (1.5 percent), City of Boston (2.1 percent), and Cape and Islands (2.3 percent) had faster annual rate of growth in the hospitals sub-sector between 2012 and 2015 than the state (0.9 percent). Only the Northeast (0.4 percent), City of Boston (-0.8 percent) and Cape and Islands (-1.1 percent) grew at a slower pace or declined compared to the state overall in the nursing and residential care sector (0.8 percent). Growth in

¹⁴ *Special Topics Report: Selected Health Care Support and Direct Care Occupations in Massachusetts*, Prepared by Commonwealth Corporation and the Center for Labor Markets and Policy, Drexel University for the Commonwealth of Massachusetts Office of the State Auditor, September 2016.

¹⁵ *Ibid.*

¹⁶ *The Changing Nature of the Health Care Workforce in Massachusetts*, Chapter 224 Workforce Impact Study, Chapter for Office of the State Auditor, Prepared by Commonwealth Corporation and the Center for Labor Markets and Policy, Drexel University, November 2016.

Chart 12: Annual Average Growth in Employment Across Three Major Health Care Industry Sub-Sectors in Massachusetts by Region, 2012-2015



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, CSV State Files, 2012 through 2015 <http://www.bls.gov/cew/>

Note: Employment growth rate for the Hospitals sub-sector in the Berkshire Region is not available as data for 2015 were suppressed.

the nursing home and residential care sector outside of the metropolitan area of Boston appears to reflect the location of aging retirees across the state. Similarly, agencies providing home health care services, that are a part of the ambulatory care sub-sector, drive much of the growth in ambulatory care employment across the state. Meeting the needs of residents aging in place is likely driving much of that growth particularly in the Pioneer Valley and Northeast regions.