

# WORKFORCE ANALYSIS OF MAINE'S HEALTH SERVICES SECTOR

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JOHN ELIAS BALDACCI  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF LABOR  
CENTER FOR WORKFORCE RESEARCH AND INFORMATION  
45 COMMERCE DRIVE  
AUGUSTA, MAINE  
04330

LAURA A. FORTMAN  
COMMISSIONER

JOHN DORRER  
DIVISION DIRECTOR

## **Workforce Analysis of Maine's Health Services Sector**

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Prepared by:  
Paul Leparulo, CFA

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Augusta, Maine

PHONE: (207) 623-7900

TTY 1-800-794-1110

FAX: (207) 287-2947

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## Preface

The Maine economy is undergoing constant change. The forces of foreign competition, technology innovation and business restructuring contribute to dynamic work environments and changing labor markets. Some industries are declining and shedding jobs, while new industries are emerging and creating new employment opportunities. The impacts of these shifts have challenged individuals, families and entire communities. Across the spectrum of Maine workplaces, more is being demanded of workers in terms of knowledge, skills, and abilities required for job performance. Increasingly, Maine's competitiveness is determined by the quality and availability of human capital.

Maine's demographics are also in flux. An aging population and the impending retirements of baby boomers will profoundly impact our labor markets and reshape long-standing patterns of demand for goods and services. Understanding these dynamics is fundamental to making effective public policies and developing sound public and private investment strategies. Business, education and training systems and workers must consult economic, demographic and labor market information in making critical choices with limited resources. These choices will have enormous implications for Maine's prospects in the years ahead.

The Maine Department of Labor, Center for Workforce Research and Information, is committed to examining the dynamics of Maine's economy and the associated impacts on the workforce and labor markets in helping to chart a more prosperous future for all Maine citizens.

The report, *Workforce Analysis of Maine's Health Services Sector*, is the culmination of a year-long effort. The report was authored by Paul Leparulo, Senior Economic Research Analyst, with able research assistance from Constance Bodine, Merrill Huhtala, and Bruce Peel. Layout and design assistance was provided by Brenda Evans. Dana Evans and Glenn Mills from provided valuable consultation and feedback, as did Mike LeVert, Maine's State Economist. We also wish to thank Trish Riley, Director, Governor's Office of Health Policy and Finance for her review and helpful comments.

The impetus for this report came from the Maine Legislature, through the deliberations of the Joint Standing Committee on Health and Human Services, passed "An Act to Ensure an Adequate Supply of a Skilled Health Care Workforce (L.D. Document 892). This legislation charged the Maine Department of Labor, Division of Labor Market Information Services (LMIS) now the Center for Workforce Research and Information, in conjunction with the Office of Health Data and Program Management, Office of Data, Research and Vital Statistics to compile a health care occupations report every four years. Our research efforts have been guided by the Health Care Workforce Forum made up of health care practitioners, educators and public policy leaders. Their contributions have been invaluable.

John Dorrer, Director  
Center for Workforce Research and Information  
Maine Department of Labor



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## EXECUTIVE SUMMARY

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- The healthcare sector (healthcare and social assistance industries) in Maine is a consistent and significant jobs producer. Employment has not only grown through the recent recession, it has increased every year since 1992.<sup>1</sup> Moreover, the 17,203 jobs generated in healthcare from 2000 to 2008 were more than the next 10 highest job producing sectors, combined. The Center for Workforce Research and Information (CWRI) expects healthcare to continue to lead the state in employment growth, generating 50 percent of all new jobs from 2006-2016.
- Strong and consistent job growth has led to 24 percent more healthcare workers per capita in Maine compared to the nation. Maine is particularly well positioned in the occupations that were identified in the inaugural healthcare occupations report as being of high-priority:<sup>2</sup> in 21 of these 23 occupations Maine has more workers per capita than the nation, with some occupations—anesthesiologists, internists (general), surgeons and physician assistants—having approximately twice the number of professionals per population than the US. The two high-priority occupations that Maine has fewer workers than the nation are respiratory therapy technicians and dentists; in these occupations Maine has nine and two percent fewer workers per capita than the US, respectively.<sup>3</sup>

Although per capita analysis indicates that Maine has more healthcare workers in most occupations compared to the nation, other indicators suggest that more workers are needed in some professions. The high-priority occupation with the most consistent signs of statewide shortages in the analyses conducted by CWRI was psychiatry. A number of other occupations including surgeons, dentists, physicians and surgeons, all other, pharmacists, obstetricians and gynecologists, pharmacy technicians, registered nurses and physician assistants had some signs of statewide shortages.

Among the non high-priority occupations, cardiovascular technologists and technicians and health technologists and technicians, all other have the most consistent signs of shortages, according to a variety of metrics.

- One of the consequences of rapid healthcare and social assistance industry employment growth has been escalating personal healthcare expenditures for Maine residents. Per capita healthcare expenditures in Maine are among the highest in the country *and* growing faster than any other state. To a certain degree, the relationship between increasing healthcare employment and higher per capita healthcare expenditures is unavoidable, at least under the current paradigm for healthcare delivery in the USA. Analysis shows that states with higher healthcare employment tend to have higher healthcare expenditures (per capita). The tension that exists between these two dynamics represents a significant issue for the state, particularly due to the fact that CWRI

employment forecasts indicate that healthcare positions will be among the fastest growing over the next several years.

- The distribution of healthcare occupational workers throughout Maine is a significant workforce issue. Healthcare employment in Maine is concentrated in the most densely populated areas of the state, leaving residents in many rural communities with inadequate access to healthcare professionals in a variety of occupations. Consider that in Maine's six most rural counties there are (on a per capita basis):
  - 70 to 80 percent fewer dentists and physicians and surgeons, all other compared to the rest of the state and the nation.
  - 60 to 70 percent fewer surgical technologists compared to the rest of the state and the nation.
  - Approximately 60 percent fewer dental hygienists compared to the rest of Maine and 40 percent less than the nation.
  - 60 percent fewer speech-language pathologists compared to the rest of Maine and 35 percent less than the nation.
  - 20 to 30 percent fewer pediatricians compared to the rest of Maine and the nation.
- In 2008 there were 58,490 people working in over 60 healthcare occupations in Maine. Surgeons, obstetricians and gynecologists and dentists were the highest paid healthcare occupations in the state in 2008, nursing aides, home health aides and pharmacy aides were the lowest paid. In aggregate, wages for healthcare occupations in Maine are comparable to national mean and median wages for like positions. Dentists, surgeons and pharmacists in Maine, however, were among the highest paid in the nation in 2008. Occupational therapists, speech-language pathologists and physical therapists in this state were among the lowest paid in the nation in 2008.
- Consumption of physician services increases dramatically with age—those over the age 65 typically require three to five times the number of physicians per population than do infants and children. Over the next two decades in Maine there is expected to be a significant increase in the segments of the population that require higher numbers of physicians per population (those over 65 years) and a decline in those segments requiring fewer physicians (those below 65 years). CWRI estimates that aging and population growth in Maine may cause the overall demand for physicians to increase by 22 percent, or nearly 850 physicians through 2030, assuming the status quo in how healthcare is financed and delivered. The same analysis indicates that aging and population growth will have a more pronounced impact on the percentage growth rate in demand for specialty physicians (cardiology and other internal subspecialties).

In terms of meeting the growing demand for physicians, the University of New England's Doctor of Osteopathic Medicine (D.O.) program and the new Maine Medical Center-Tufts University School of Medicine Medical School Program will be sources of newly trained doctors. With more than one fifth of Maine's physician workforce over the age of 60, however, the rate of practitioner attrition may increase in coming years due to retirements.

- A prerequisite for effective workforce analysis is having reliable data and a systematic process for measuring the supply of newly trained workers entering the market. Maine has no such process. The current data sources used for tracking program completers have limitations that make collecting comprehensive, accurate data challenging and time consuming. The development of a more reliable and efficient system for tracking Maine's health education program completers is essential for more effective labor market analyses.

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## ABOUT THIS REPORT

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As the state's most significant jobs producing sector over the last 10 years, healthcare plays a vital role in the statewide economy. Going forward, the importance of the healthcare sector will increase, particularly as employment growth in this area is expected to be among the fastest of all industries in the state. Understanding the critical nature of having enough healthcare professionals in the appropriate occupations and required locations, the Maine legislature has commissioned a series of reports that assess healthcare workforce data, trends and challenges in Maine. This is the second report in this series.

This report is structured with three main sections: Maine's Healthcare Sector, Maine's Healthcare Occupations and Healthcare Workforce Development Challenges for Maine.

**Maine's Healthcare Sector** is a macroeconomic overview of workforce data and trends in the state's healthcare sector. The healthcare sector is contrasted with other industries in terms of size, jobs growth, and productivity per worker. The relationship between healthcare employment and per capita healthcare expenditures is examined.

**Maine's Healthcare Occupations** reviews a variety of workforce statistics for the 58,490 healthcare occupational professionals in this state. The distribution and employment mix of healthcare occupational workers by industry, the number of employed workers in each occupation and their respective wages are discussed. Compensation in Maine's healthcare occupations is contrasted with US mean wages for the same occupations. Occupational employment forecasts are detailed and analyzed. More occupational information such as job descriptions and education requirements, schools in the state offering related educational programs, the number of program completers at each school by degree and gender, and help wanted online advertising trends for each occupation may be found in Appendix VI.

**Healthcare Workforce Development Challenges for Maine** analyzes some of the significant issues affecting healthcare workforce development in this state. Two areas of specific focus are identifying shortages of workers by occupation and region and assessing the impact that the aging of this state's population will have on the demand for physicians. The demographics of Maine's healthcare workforce—a topic covered in depth in the first healthcare report—is also summarized.<sup>4</sup>

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## DEFINITIONS

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### *Healthcare Sector*

For the purposes of this report the healthcare sector is defined as all establishments in the hospital, ambulatory care, nursing and residential care services and social assistance industries. This is the definition used by the North American Industry Classification System (NAICS) for the healthcare sector. As an economic sector is a conglomeration of industries involved in similar businesses, the healthcare sector also may properly be referred to as the healthcare and social assistance industries.

NAICS defines the four healthcare industries as follows:

- Ambulatory care services includes offices of physicians, dentists, and other healthcare practitioners (chiropractors, optometrists, mental health practitioners, specialty therapists, podiatrists, miscellaneous health practitioners), home healthcare services, outpatient care centers (family planning centers, outpatient mental health centers, HMO medical centers, kidney dialysis centers, free standing emergency medical centers and all other outpatient care centers), medical and diagnostic labs, and other ambulatory care services (ambulance services, blood and organ banks and miscellaneous ambulatory health services).
- Hospitals include general medical and surgical hospitals, psychiatric and substance abuse hospitals, as well as specialty hospitals.
- Nursing and residential care facilities include nursing care, residential mental health, substance abuse, community care facilities for the elderly and other residential care facilities.
- Social assistance includes individual and family services (child and youth services, services for the elderly and disabled, other individual and family services), emergency and other relief services (community food services, temporary shelters, other community housing services) vocational rehabilitation services and child day care services.

### *Traditional Healthcare Industries*

In this report the traditional healthcare industries are represented by the ambulatory care, hospital and nursing and residential care facility industries.



## *Healthcare Occupations*

Healthcare occupations are defined in accordance with the Standard Occupational Classification (SOC) system. SOC is the basic occupational coding taxonomy used by all government statistical agencies. SOC disaggregates all healthcare occupations into two broad categories: healthcare practitioners and technical workers (henceforth referred to as practitioners) and healthcare support workers. Healthcare practitioners represent the highest levels of licensure in the medical field—doctors, dentists, registered nurses and physical and occupational therapists are a representative sample of healthcare practitioners. The healthcare support worker category includes the lower levels of licensure—nursing aides, home health aides, physical therapist assistants, occupational therapist aides, etc. A complete list of all healthcare practitioner and support occupations may be found in the Appendix I.

## *High-Priority Occupations*

A number of high-priority healthcare occupations were identified by Maine's Healthcare Workforce Forum in 2006. While all healthcare occupations are important, these high-priority professions were recognized as being of greater interest to policymakers. Some tables in this report focus exclusively on these occupations. Recognizing that the set of high-priority will change over time, statistics on all healthcare professions are also included in the main body of this report or in the appendices. For the purposes of this report, the set of high-priority occupations include:

- Physicians and surgeons, all<sup>5</sup>
- Physician assistants
- Surgical technologists
- Dentists
- Registered nurses (includes nurse practitioners)<sup>6</sup>
- Direct care workers (home health aides, nursing aides & Certified Nursing Assistants)<sup>7</sup>
- Occupational therapists
- Physical therapists
- Radiation therapists
- Respiratory care therapists and technicians
- Pharmacists
- Pharmacy technicians
- Speech-language pathologists
- Social Workers<sup>8</sup>

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## ACRONYMS USED

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CWRI	Center for Workforce Research and Information
BLS	Bureau of Labor Statistics
OSDS	Occupational Supply Demand System
US DHHS	United States Department of Health and Human Services
LQ	Location Quotient
HRSA	Health Resources and Services Administration
NAICS	North American Industry Classification System
OES	Occupational Employment Statistics
SOC	Standard Occupational Classification system
GDP	Gross Domestic Product
PHCE	Personal Healthcare Expenditures
S/D	Supply Demand
HWOL	Help wanted online job advertisements
JVS	Job Vacancy Survey
NMF	No Meaningful Figure
NA	Not available
RN	Registered Nurse
IPEDS	Integrated Postsecondary Education Data System
NCES	National Center for Education Statistics
FTE	Full time equivalent
OJT	On the job training
AO	All other

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## MAINE'S HEALTHCARE SECTOR

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Maine's healthcare sector has rapidly become one of the largest and most significant economic sectors in the state. Maine's healthcare sector is:

- **Significant in size.** Healthcare is the largest private sector in Maine in terms of employment and wages. In 2008, the healthcare sector represented 17 percent of statewide employment and 18 percent of total wages. These figures are significantly higher than the national average—last year, healthcare accounted for 13 percent and 12 percent of total jobs and wages across the US, respectively.

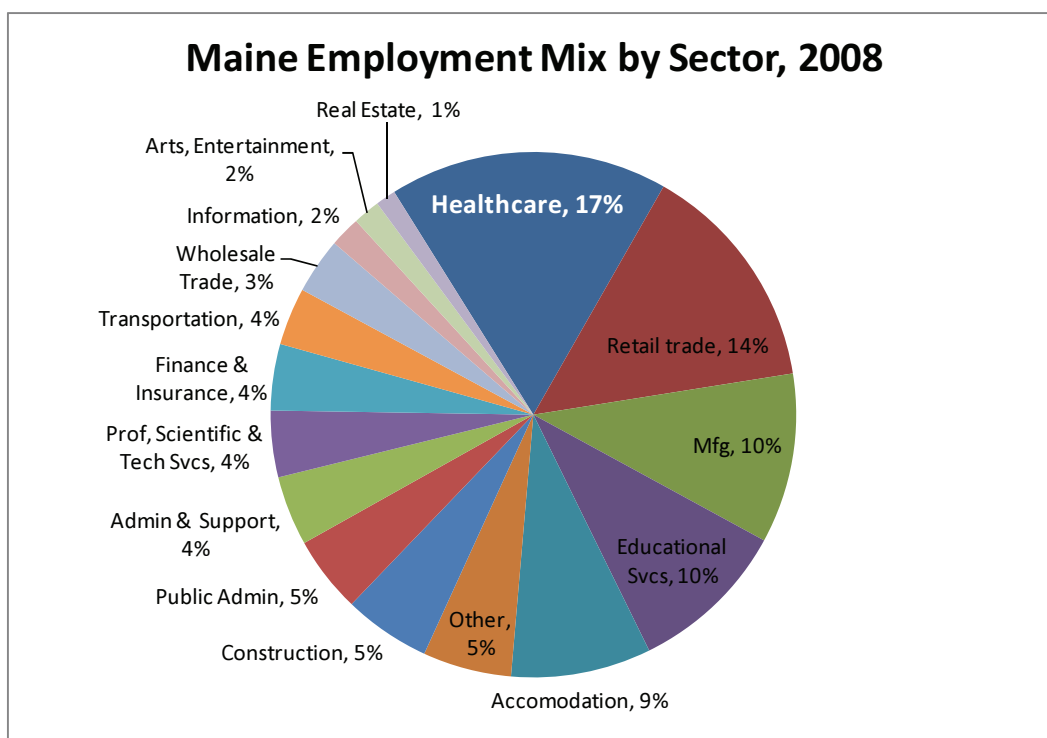


Figure 1

In terms of gross domestic product (GDP), healthcare was 11.2 percent of the economy and the second largest private sector in the state in 2008 (figure 2). Representing 13.6 percent of statewide GDP, real estate and renting and leasing was the largest private sector in Maine. Ten years ago the healthcare sector had the fourth largest GDP in the state. The traditional healthcare industries—ambulatory care, hospitals and nursing and residential care facilities—accounted for 86 percent of Maine's health sector GDP increase from 1997 to 2007.

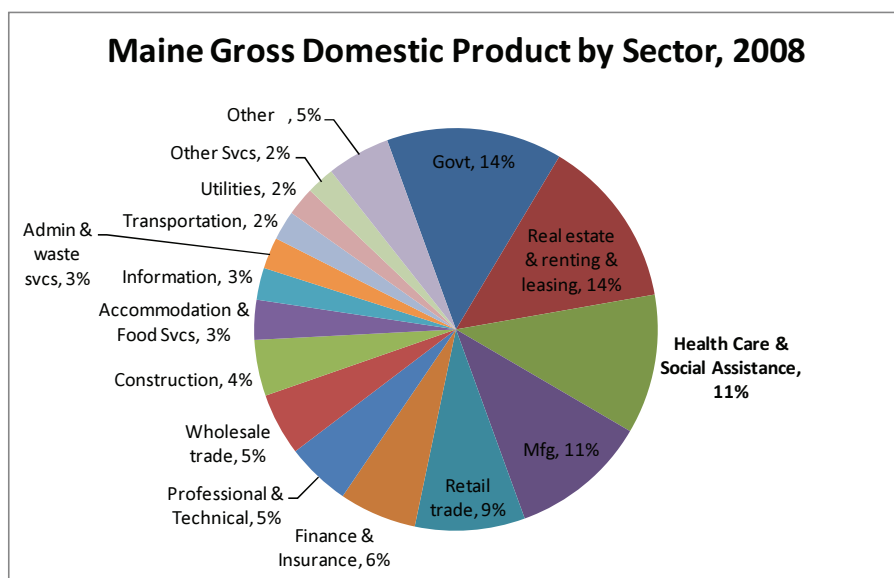
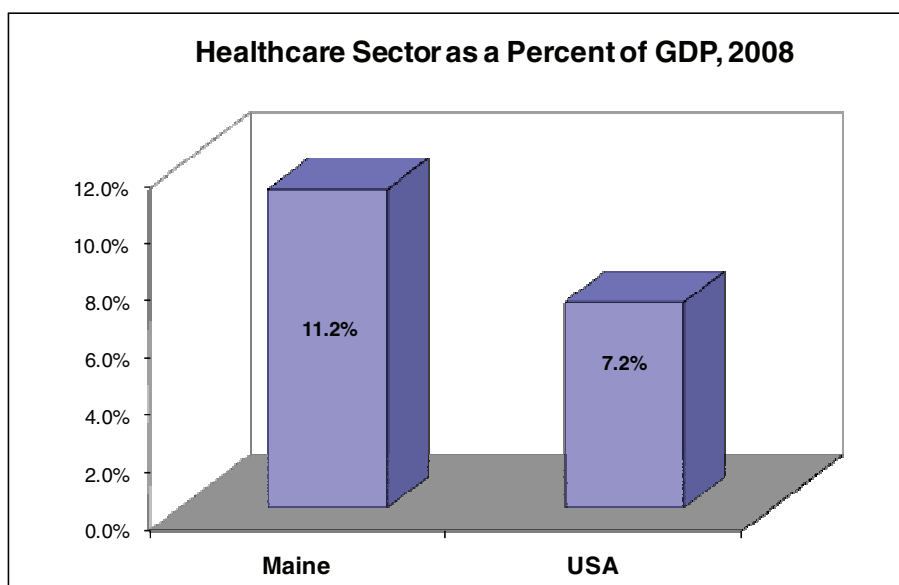


Figure 2

As a percent of GDP, the healthcare sector is significantly larger in Maine than it is for the US (figure 3).



As a percent of GDP, the healthcare industry is 55% larger in Maine than it is for the US.

Figure 3

- Predominantly defined by the ambulatory healthcare, hospital and nursing and residential care facility industries, in terms of GDP and employment.** These traditional healthcare industries represented 88 and 82 percent of 2007 Maine healthcare sector GDP and employment, respectively (figures 4 and 5).

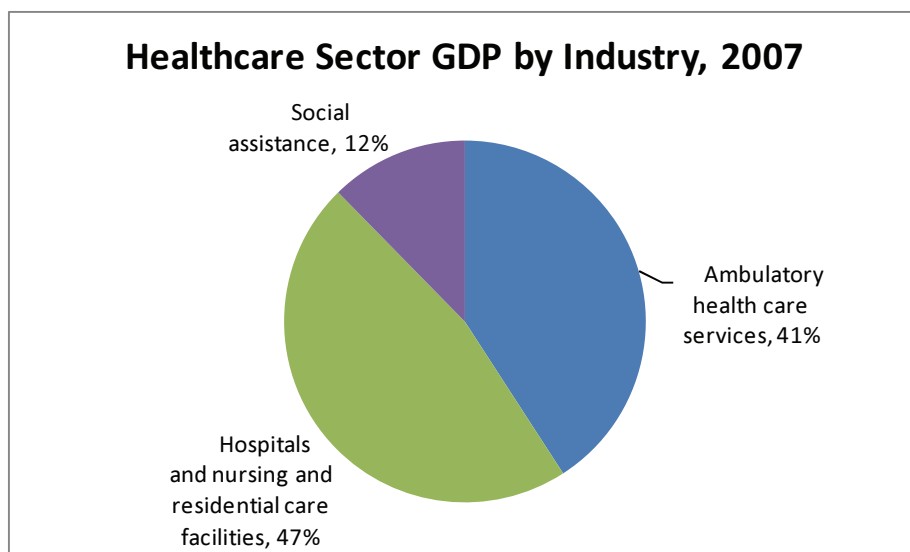


Figure 4<sup>9</sup>

The traditional healthcare industries represent 88 percent of Maine healthcare sector GDP...

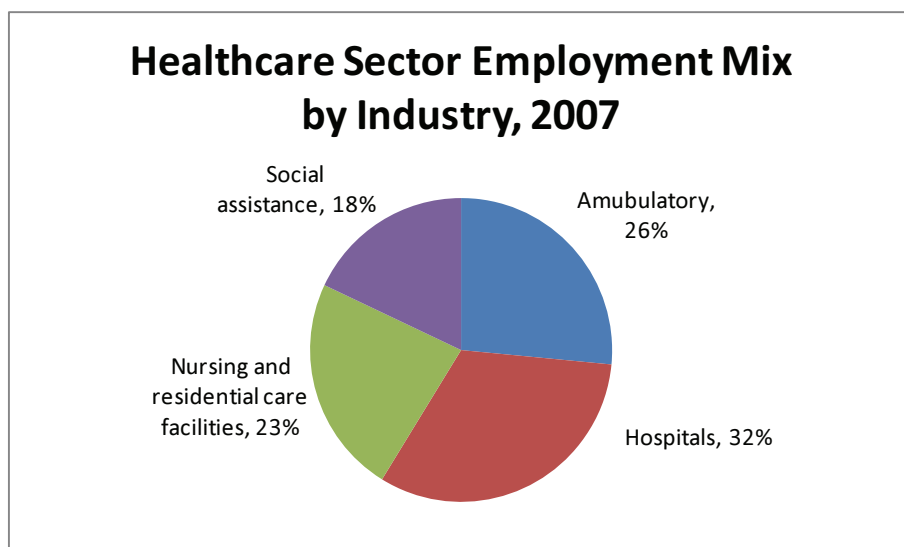


Figure 5

...and 82 percent of Maine healthcare sector employment.

- **A consistent jobs producing sector.** Healthcare sector employment has grown not only through the recent recession, but for seventeen consecutive years (at least).<sup>10</sup> Few, if any other sectors, have a comparable history of consistent jobs production.

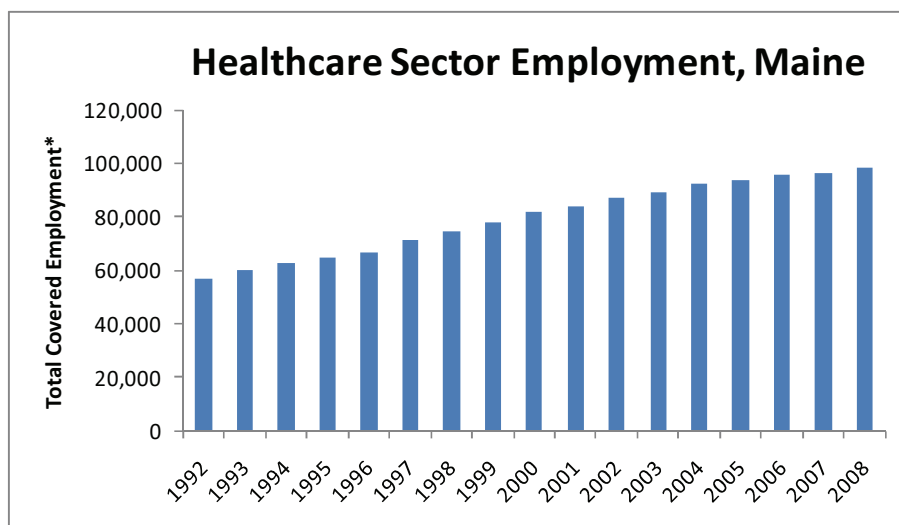
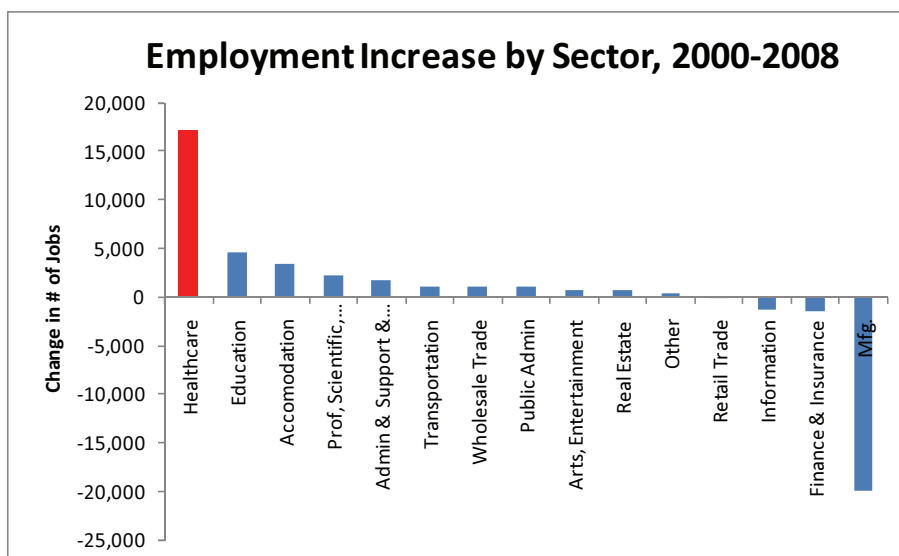


Figure 6 \*Employment covered by Maine employment security law. The primary exclusion of which are the self employed.

- **A significant jobs producing engine.** Employment has not only been consistent, it has been significant: A ranking of Maine’s economic sectors by number of jobs produced from 2000 through 2008 shows that healthcare generated more jobs than the next 10 sectors combined. See figure 7, below.



Maine’s healthcare sector produced more jobs than the next 10 sectors combined (2000-2008).

Figure 7

From 2001 through 2008 the traditional healthcare industries accounted for 77 percent of Maine’s total healthcare sector employment increase; social assistance accounted for the remaining 23 percent (figure 8).

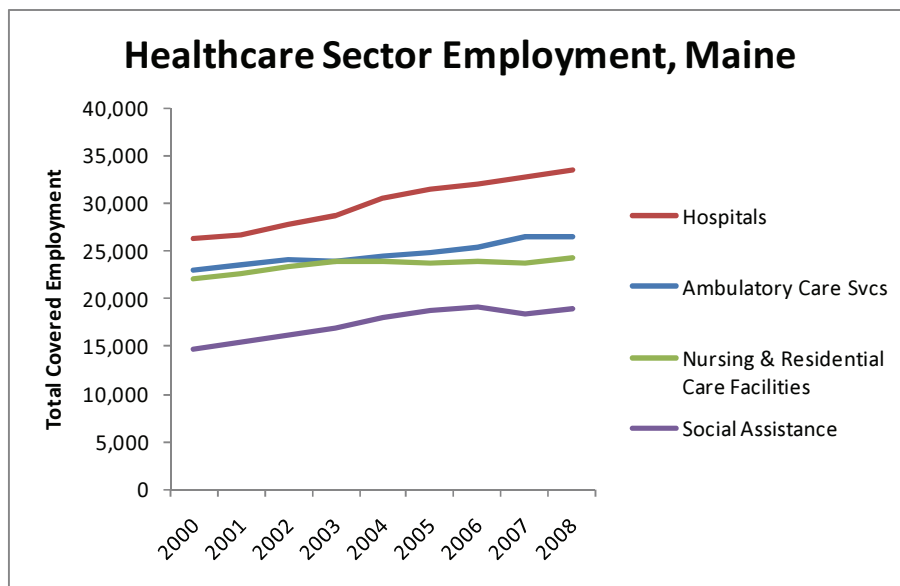


Figure 8

- Growing rapidly.** Healthcare sector employment has grown faster than all other sectors in recent years. Since 2000, healthcare employment had an average annual growth rate of 2.3 percent per year versus 0.2 percent for all wage and salary jobs statewide.

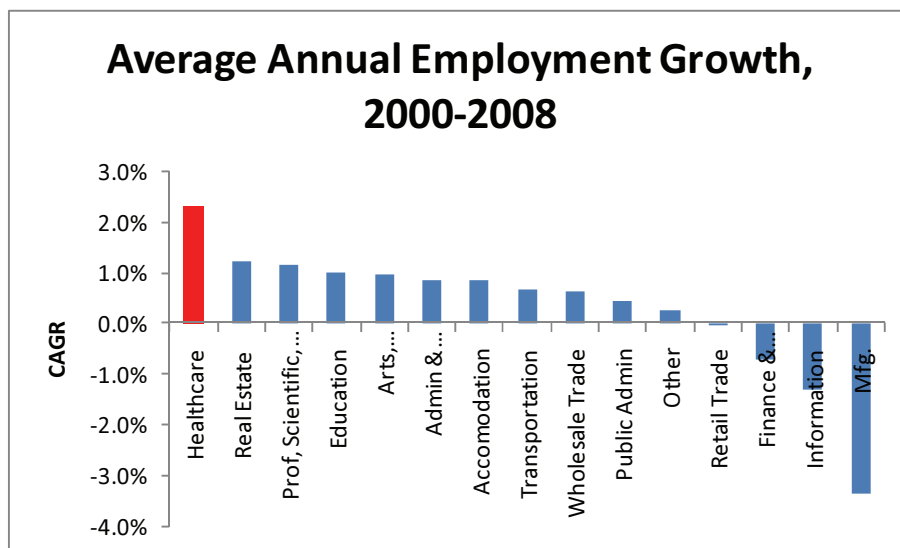


Figure 9

- Labor intensive.** The healthcare sector is relatively labor intensive, resulting in productivity levels below the state average. In 2008, GDP per healthcare worker in Maine was \$48,839, 18 percent below the productivity per worker for all industries in the state. Moreover, over the last ten years productivity per healthcare sector worker in Maine has consistently trailed that of the US healthcare sector average by 12 to 15 percent. There is, however, a trend of improvement; Maine's healthcare sector productivity gap relative to the US has been narrowing, as seen in figure 10, below.



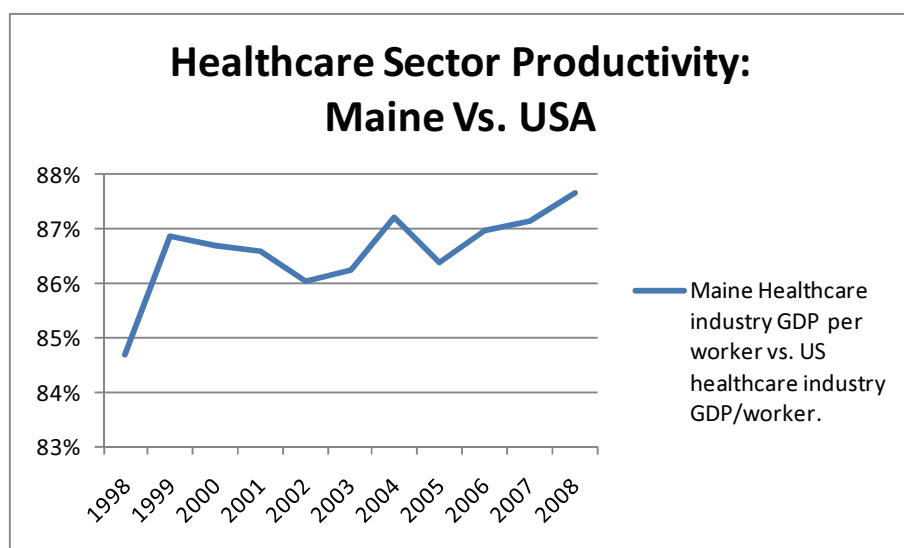
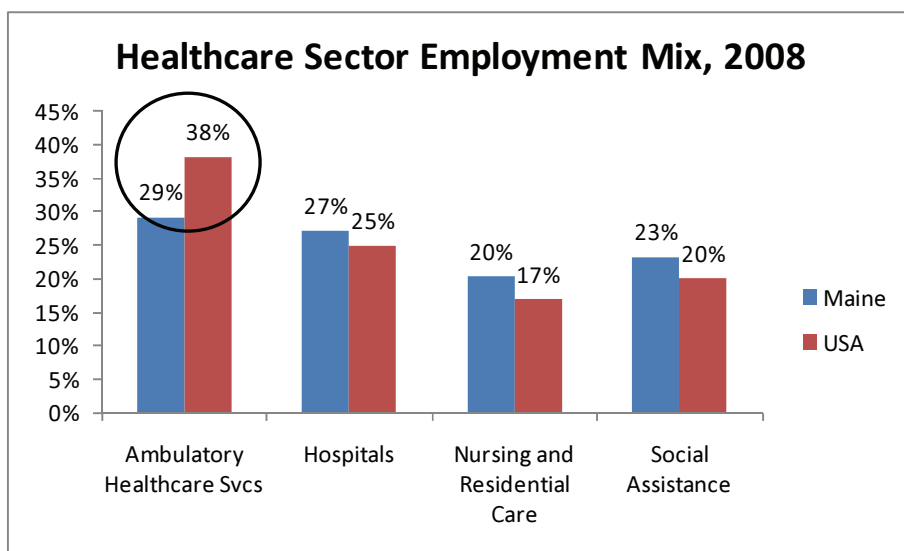


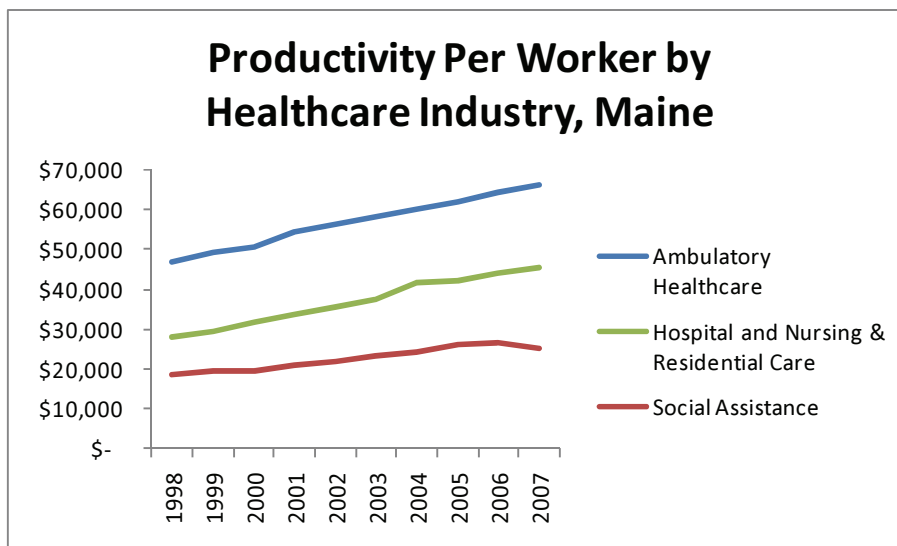
Figure 10

A primary factor in the lower productivity of Maine's healthcare sector versus the nation is the mix of employment by industry. Compared to the nation, Maine has historically had a greater percentage of employment in social assistance, nursing and residential care facilities and hospitals, and a lower percentage in ambulatory care services (figure 11). Productivity per worker in ambulatory care services is approximately 150 percent higher than in social assistance and 55 percent higher than in hospitals and nursing and residential care facilities (figure 12).



Compared to the nation, Maine's healthcare sector has a lower proportion of employment in ambulatory services and a higher mix in other areas.

Figure 11



Productivity per worker in the ambulatory care industry (where Maine has a lower percentage of employment compared to the nation) has historically been 150 percent greater than in social assistance.

Figure 12

While healthcare sector productivity in Maine has been lower than the nation, it has been growing faster, as seen in figure 13.

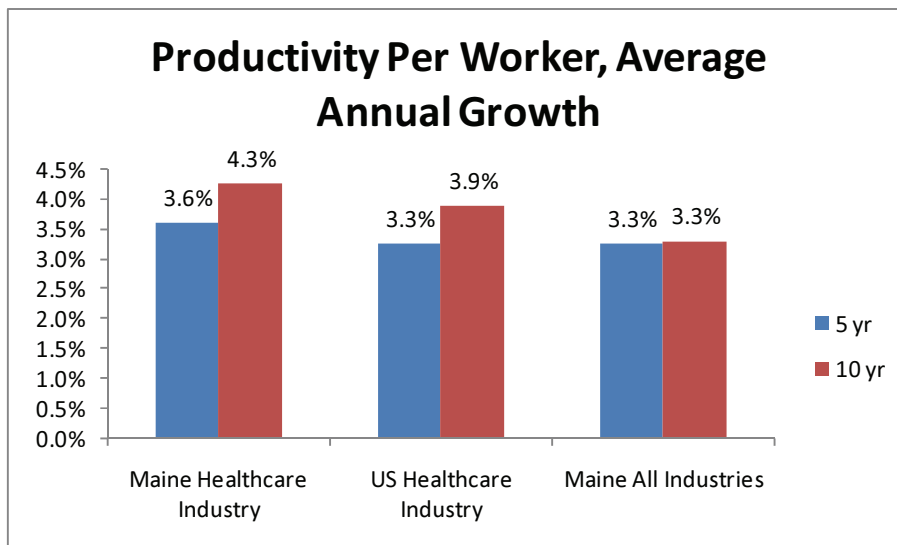


Figure 13

Although the healthcare sector in Maine has experienced rapid and consistent expansion in employment, this growth has been accompanied by escalating personal healthcare expenditures for Maine residents. In 2004, per capita healthcare expenditures in Maine were \$6,540, the third highest in the nation behind the District of Columbia and Massachusetts (figure 14). In 1991, per capita healthcare expenditures in Maine were below the national average and the 30<sup>th</sup> highest in the country.

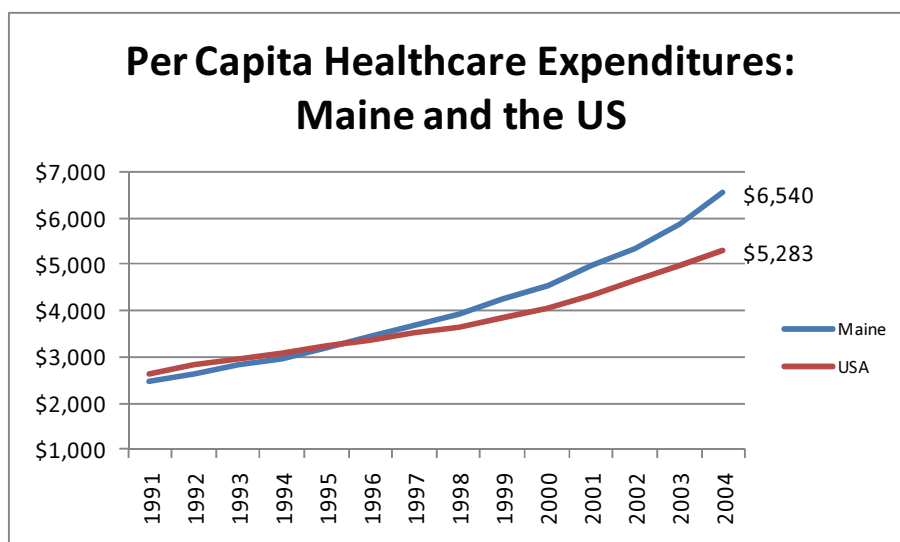


Figure 14

Maine's per capita healthcare expenditures by segment are illustrated in figure 15. From 1991 to 2004, growth in per capita healthcare expenditures at hospitals, physicians and clinics, prescription drugs and non-durable medical products, and other personal healthcare contributed to nearly 90 percent of the dollar change in this state's total per capita healthcare expenditures.

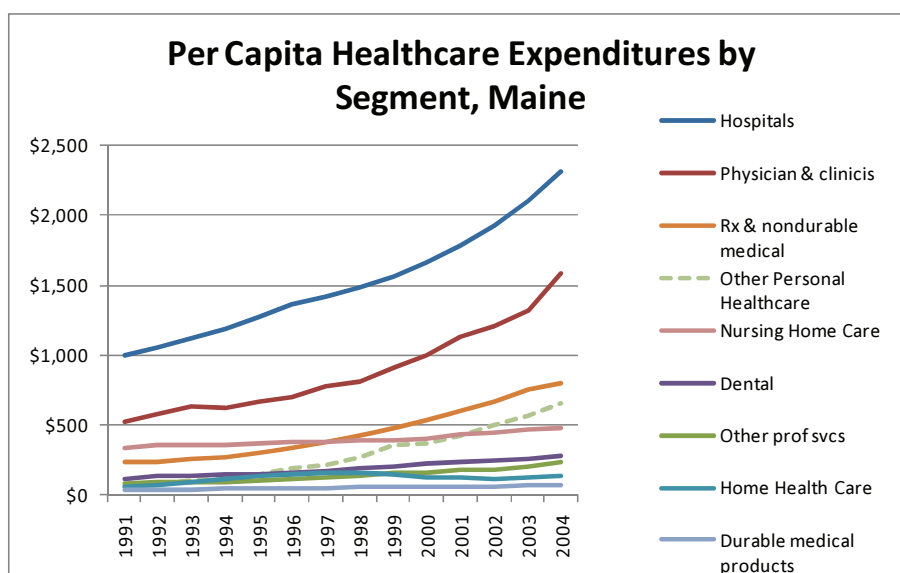
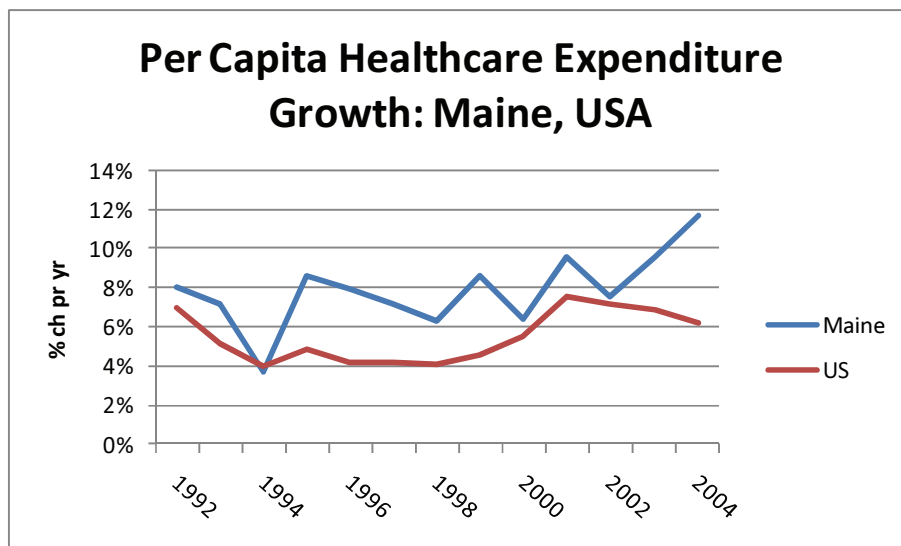


Figure 15 US DHHS National health expenditure category definitions may be found in Appendix II.

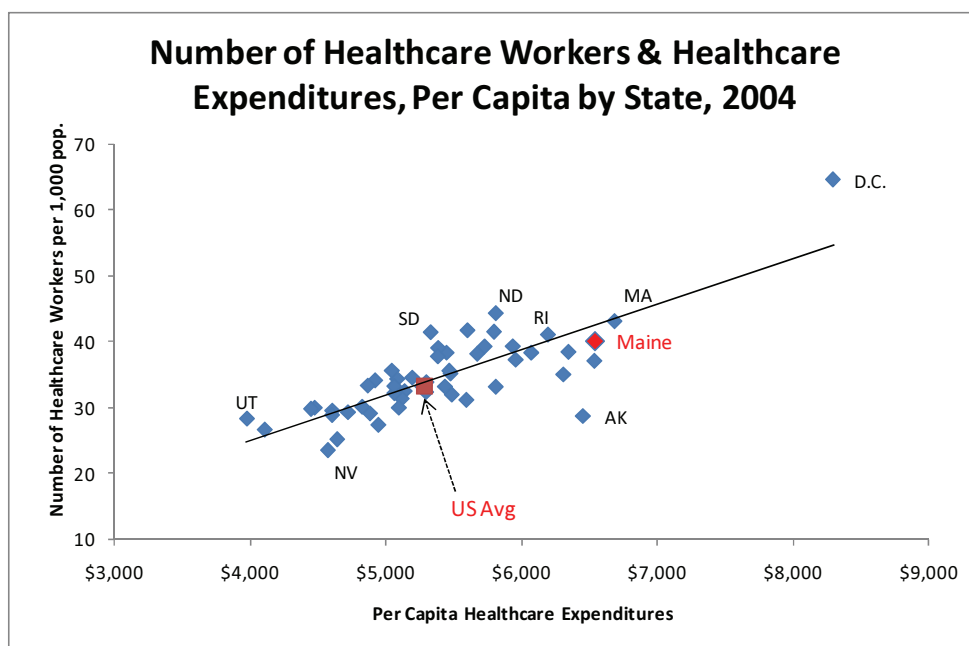
In terms of average annual growth rates, Maine's total per capita healthcare expenditures grew 7.8 percent per year from 1991 to 2004, faster than any other state in the country (figure 16). Over the same time period, per capita healthcare expenditures for the nation grew at a 5.5 percent annual rate.



From 1991-2004 per capita healthcare expenditures in Maine grew 7.8 percent per year, faster than any state 2004, per capita healthcare expenditures grew even faster, at a 9.6 percent rate per year. This was also the highest in the country.

Figure 16

To a certain degree, the relationship between increasing healthcare employment and higher per capita healthcare expenditures is unavoidable, at least under the current paradigm for healthcare delivery in the USA. CWRI analysis shows that the level of per capita health spending in a state is positively correlated with per capita healthcare employment: states with higher healthcare employment tend to have higher healthcare expenditures (per capita). This relationship can be seen in figure 17.<sup>11</sup>



More healthcare workers (per capita) typically mean higher per capita healthcare spending within a state. In 2004 Maine had 20 percent more healthcare workers per capita than the nation and 24 percent higher per capita healthcare expenditures.

Figure 17

Despite the positive correlation illustrated in the above chart, there is still significant variability in a state's healthcare expenditures for a given level of healthcare employment. Consider that Maine's health spending per person is 10 to 20 percent higher than states with comparable numbers of per capita healthcare workers.<sup>12</sup> With regard to the cost drivers of this state's

healthcare expenditures, The Advisory Council On Health Systems Development (ACHSD) found that nearly 37 percent of the increase in Maine's healthcare expenditures from 1998 to 2005 were attributable to chronic diseases.<sup>13</sup>

Robust and consistent employment growth in Maine's healthcare sector over the last decade and a half has been a significant economic achievement. The increase in personal healthcare expenditures over the same time frame, on the other hand, gives one pause. The tension that exists between these two dynamics represents a significant issue for the state, particularly due to the fact that CWRI employment forecasts indicate that healthcare positions will be among the fastest growing over the next several years. Recognizing this, the Governor's Office created a State Health Plan with a roadmap for addressing the significant health spending cost drivers in Maine. Moreover, goals for achieving a healthier population and a more efficient healthcare industry are in place. Achieving these targets will help bring Maine's health expenditures per person more in line with the averages.

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## HEALTHCARE OCCUPATIONS IN MAINE

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Healthcare occupations represent half of the jobs in Maine's healthcare sector.<sup>14</sup> The vital role played by healthcare occupational workers in delivering medical care throughout the state highlights the importance of understanding employment and wage characteristics of these workers. The Occupational Employment Statistics (OES) program, a cooperative effort between the Bureau of Labor Statistics (BLS) and CWRI, produces employment and wage estimates for over 800 occupations and is the best available source of data in this respect. These estimates are available at the national, state, metropolitan and nonmetropolitan area levels, and do not include non pay rolled workers or independent contractors.<sup>15</sup>

The following data on the distribution and mix of healthcare occupational employment by industry, occupational employment statistics, wage statistics and employment forecasts were produced by CWRI's OES program. Occupational job descriptions and minimum education requirements, schools in Maine offering educational programs for each occupation, the number of program completers by school, degree and gender and help wanted online job advertising trends by healthcare occupation are available in Appendix VI.

### Healthcare Occupational Employment Distribution by Industry

There were 58,490 people working in healthcare occupations in Maine in 2008. Approximately 86 percent of these healthcare workers were employed in the healthcare sector (ambulatory care, hospitals, nursing and residential care facilities, social assistance industries), while the remaining 14 percent were employed in non healthcare industries.

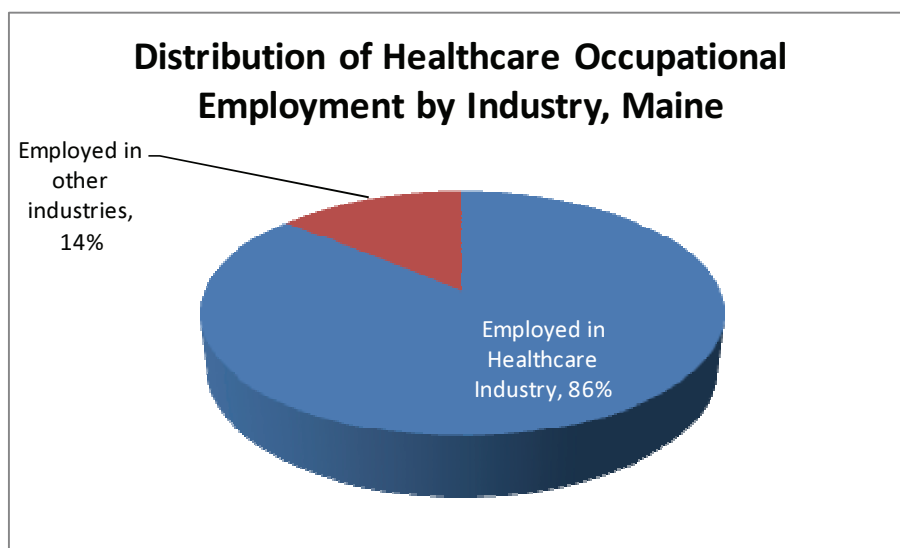


Figure 18

Of the 86 percent of the state's healthcare occupational workforce that was employed in the healthcare sector, 42 percent were employed at hospitals, 29 percent in ambulatory care, 26 percent at nursing and residential facilities and three percent were employed in social assistance.

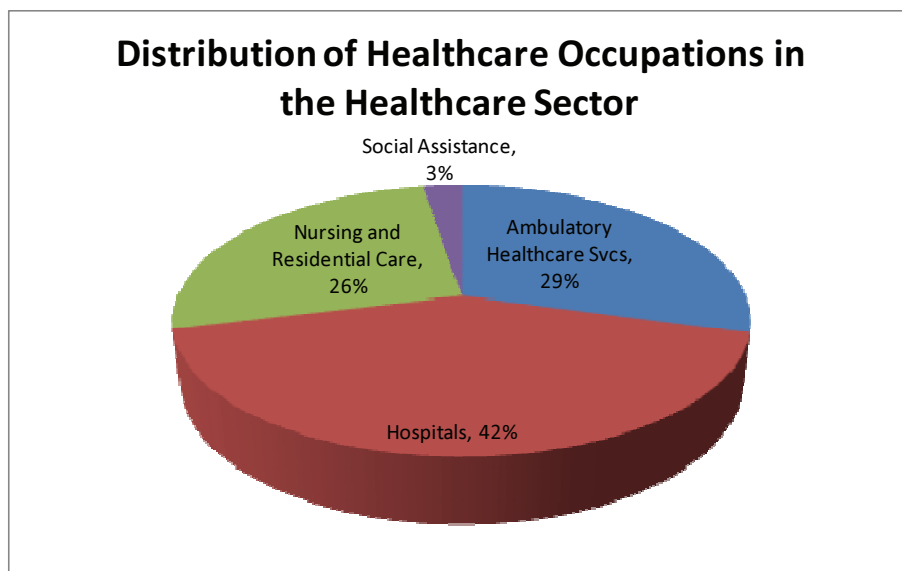


Figure 19

Of the 14 percent of Maine's healthcare occupational workers that were not employed in the healthcare sector, 29 percent were working in public administration, 21 percent in the professional, scientific and technical services industry, 19 percent in health and personal care stores, 17 percent in education services, 3 percent at insurance carriers, and the rest in other industries (manufacturing, accommodations and food services, administration and support, etc.)

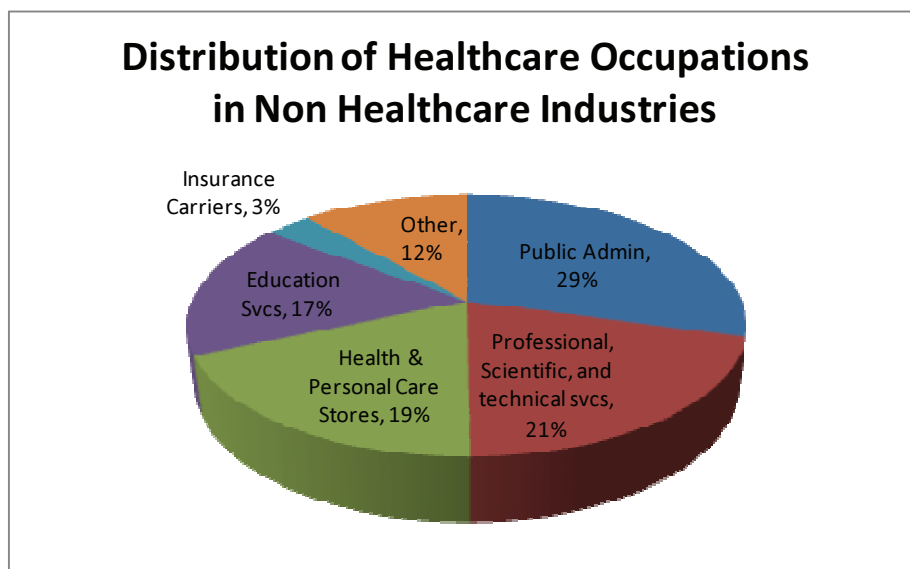


Figure 20



## Healthcare Occupational Employment Mix within the Healthcare Industries

It is useful to understand the healthcare occupational employment mix within Maine's healthcare and social assistance industries. Figure 21 illustrates that registered nurses (RNs) were, by far, the healthcare occupation in greatest number at Maine's hospitals in 2007. Nursing aides and radiologic technologists and technicians represented the second and third largest healthcare occupations working at Maine hospitals. Occupations in the "other" category are listed in Appendix IV.

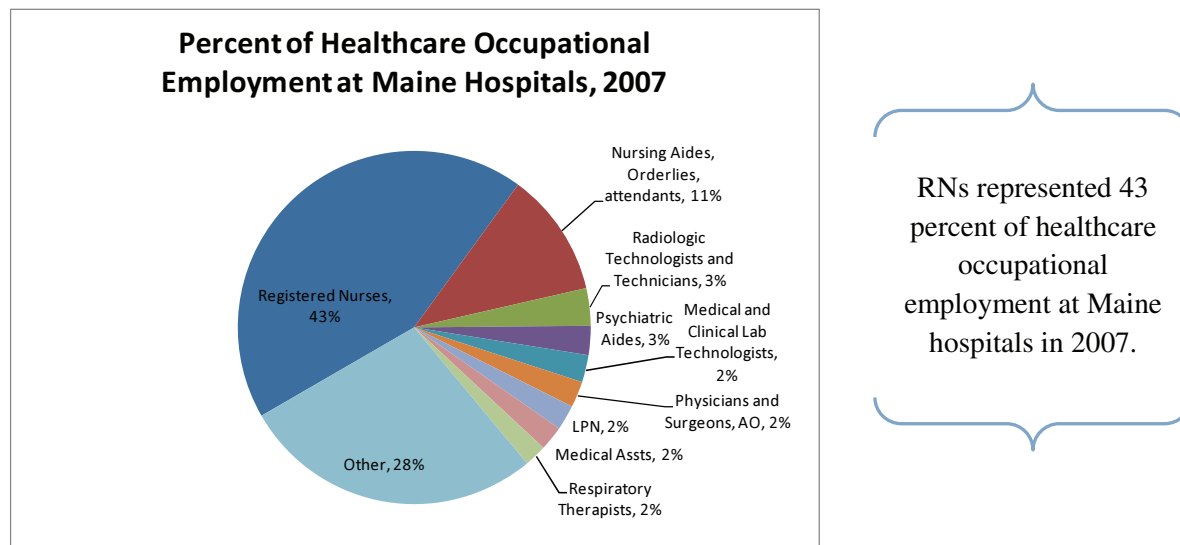


Figure 21

RNs, medical assistants, dental assistants and hygienists, physicians and surgeons, all other, and home health aides represented nearly 50 percent of healthcare occupational employment within Maine's ambulatory care services industry in 2007. Other top healthcare occupations in the ambulatory industry may be seen in figure 22. Other healthcare occupations in the ambulatory care industry are enumerated in Appendix IV.

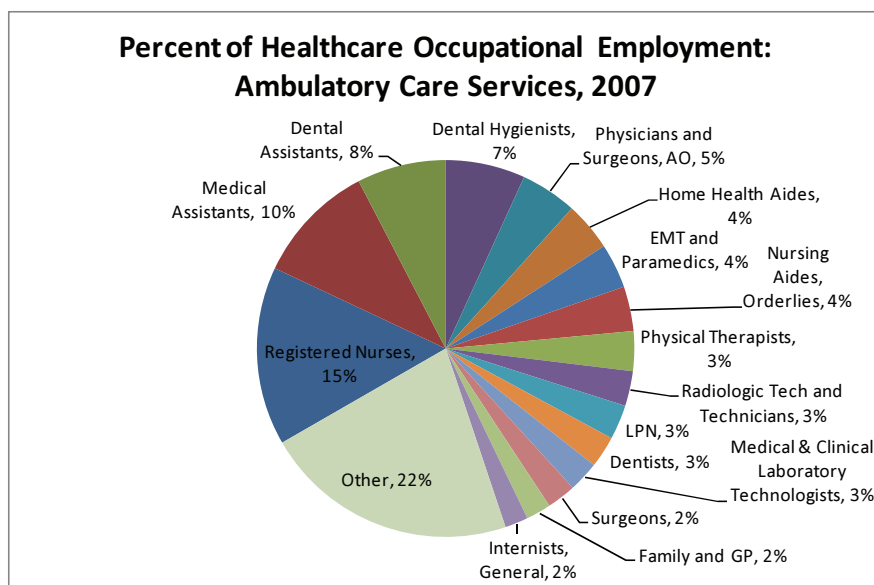


Figure 22

Nursing aides, orderlies and attendants and home health aides represented nearly 80 percent of total healthcare occupational employment in the nursing and residential care facility industry in 2007. RNs and LPNs represented 11 and 6 percent of industry employment, respectively.

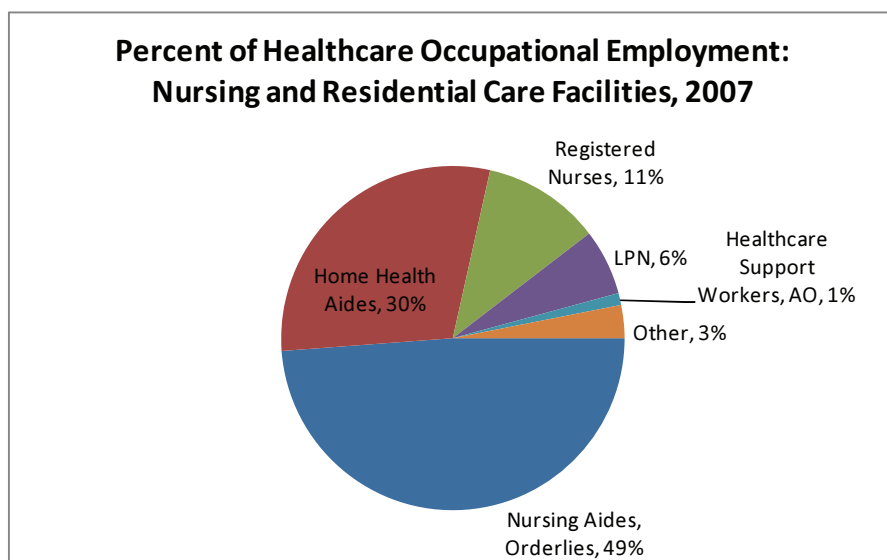


Figure 23

In 2007 healthcare occupations represented only seven percent of total employment within Maine's social assistance industry. The largest healthcare occupations employed in the social assistance industry—home health aides, RNs and nursing aides—represented 38, 17 and 11 percent of total healthcare occupational employment, respectively.<sup>16</sup>

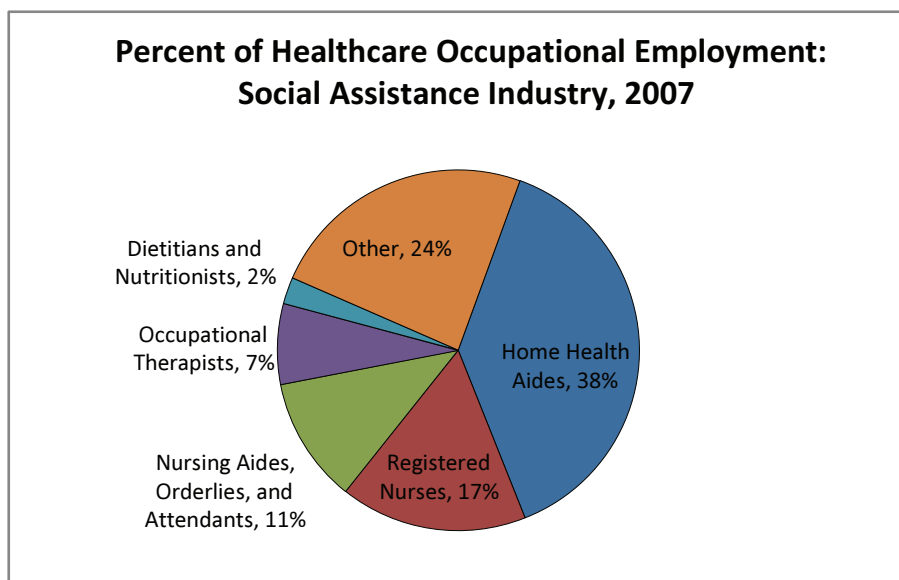


Figure 24

## Occupational Employment Statistics

Employment in Maine's healthcare occupations grew from 52,670 persons in 2004 to 58,490 in 2008. This represented 2.7 percent average annual employment growth, far above the 0.4 percent employment growth of all occupations in Maine over the same period.

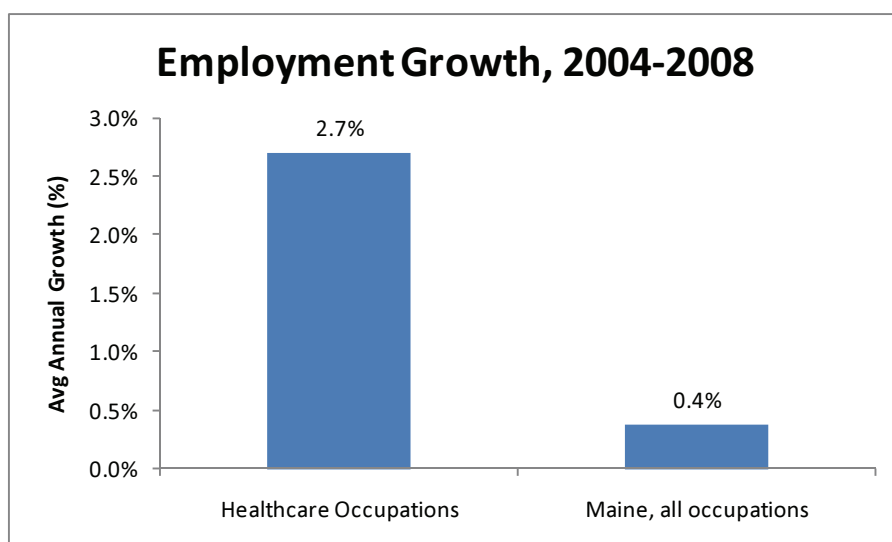


Figure 25

The Standard Occupational Classification System (SOC) disaggregates all healthcare occupations into two broad categories: healthcare practitioners and technical workers (henceforth referred to as practitioners) and healthcare support workers. Healthcare practitioners represent the highest levels of licensure in the medical field—doctors, dentists, registered nurses and physical and occupational therapists are a representative sample of healthcare practitioners. The healthcare support worker category includes the lower levels of licensure—nursing aides, home health aides, physical therapist assistants, occupational therapist aides, etc. A complete list of all

healthcare practitioner and support occupations may be found in the Appendix I. In 2008 practitioners and support workers represented 62 percent and 38 percent of Maine's healthcare occupational employment, respectively.

In recent years, healthcare support employment growth has exceeded practitioner employment growth in Maine.

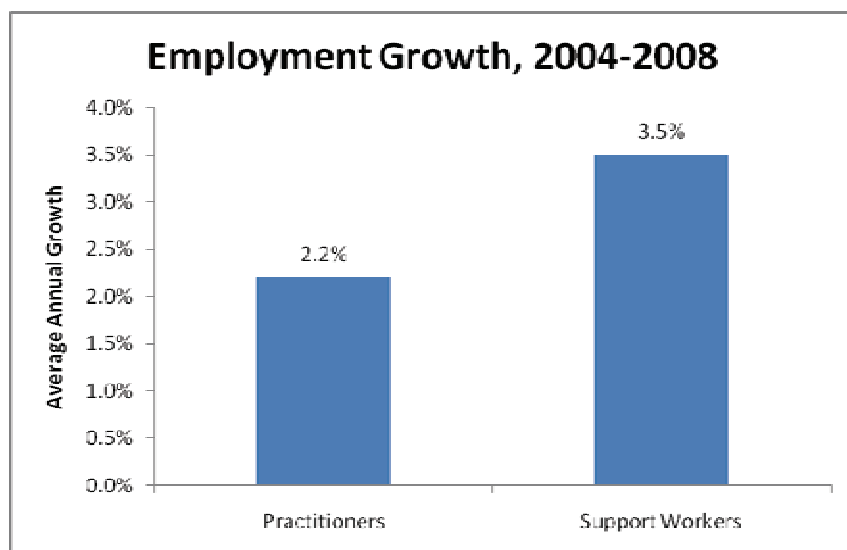


Figure 26

Disaggregating the occupational categories further reveals that the 58,490 healthcare workers in Maine were distributed across 60+ occupations. Employment statistics for these occupations are enumerated in figures 27 and 28. Occupations highlighted in yellow are the high-priority occupations that were identified by Maine's Healthcare Workforce Forum in 2006.

In interpreting the tables below, it should be noted that OES data is designed to provide detailed employment and wage statistics *at a point in time*. Changes in occupational definitions, in the way data is collected and in the timing of the surveys can make drawing definitive conclusions from comparisons between two points in time, or time series analysis, challenging. Although the OES program is considering making changes that would make time series analysis more fruitful, such efforts are in the early stages. On the other hand, OES data for the larger occupations (in terms of number employed) tends to be more statistically reliable and can be suitable for comparisons between different points in time. As such, in order to gain perspective on how occupational employment levels have changed in recent years, figure 27 includes data from 2004 and 2008 for healthcare occupations with more than 1,000 employees in 2008. Figure 28 includes only 2008 employment data as these relatively smaller occupations are more subject to the aforementioned caveats.

Healthcare Occupational Employment Statistics						
<i>Occupations with more than 1,000 Employed in 2008</i>						
SOC Code	Occupation	Number Employed 2004	Number Employed 2008	Change in Employment, 2004-2008	Avg. Annual Empl. Growth 2004-2008	Pct (%) of Total Healthcare Workforce
29-1111	RNs	13,340	14,050	710	1.3%	24.0%
31-1012	Nursing Aides, Orderlies	8,890	9,710	820	2.2%	16.6%
31-1011	Home Health Aides	4,980	5,350	370	1.8%	9.1%
31-9092	Medical Assts	1,520	2,120	600	8.7%	3.6%
29-2061	LPN, LVN	2,000	1,710	-290	-3.8%	2.9%
29-2052	Pharmacy Tech	1,120	1,570	450	8.8%	2.7%
29-1069	Physicians and Surgeons, All Other	800	1,260	460	12.0%	2.2%
29-2034	Radiologic Tech	930	1,260	330	7.9%	2.2%
29-2041	EMT	1,470	1,260	-210	-3.8%	2.2%
29-1051	Pharmacists	880	1,220	340	8.5%	2.1%
29-2021	Dental Hygienists	930	1,120	190	4.8%	1.9%
31-9091	Dental Assistants	910	1,040	130	3.4%	1.8%

Figure 27 High-priority occupations highlighted.

- Occupations with the strongest employment growth between 2004 and 2008 were: physicians and surgeons, all other, pharmacy technicians, pharmacists, medical assistants and radiologic technologists and technicians.
- Employment growth for LPNs and EMTs was negative.

# Healthcare Occupational Employment Statistics, Cont'd.

*Occupations with less than 1,000 Employed in 2008*

SOC Code	Occupation	Number Employed 2008	Pct (%) of Total Healthcare Workforce
31-1013	Psychiatric Aides	970	1.7%
29-1123	Physical Therapists	970	1.7%
29-2011	Medical/Clinical Lab Technologists	930	1.6%
31-9094	Medical Transcriptionists	800	1.4%
29-2071	Med Records and Health Info Tech	770	1.3%
29-1062	Family and General Practitioners	740	1.3%
29-1071	Physician Assistants	730	1.2%
29-2012	Med/Clinical Lab Technicians	710	1.2%
29-1127	Speech-Language Pathologists	710	1.2%
29-1122	Occupational Therapists	630	1.1%
29-1126	Respiratory Therapists	540	0.9%
31-9099	Healthcare Support Workers, All Other	490	0.8%
29-2055	Surgical Technologists	470	0.8%
29-1067	Surgeons	390	0.7%
29-1063	Internists, General	380	0.6%
29-1021	Dentists	360	0.6%
29-1061	Anesthesiologists	270	0.5%
29-1031	Dietitians and Nutritionists	250	0.4%
29-9011	Occupational Health and Safety Specialists	250	0.4%
31-9093	Medical Equipment Preparers	240	0.4%
29-2081	Opticians, Dispensing	240	0.4%
31-9095	Pharmacy Aides	230	0.4%
29-9099	Healthcare Practitioners, All Other	200	0.3%
31-2021	Physical Therapist Assistants	190	0.3%
29-1011	Chiropractors	180	0.3%
31-9011	Massage Therapists	180	0.3%
29-2051	Dietetic Technicians	170	0.3%
29-2031	Cardiovascular Tech	170	0.3%
31-2022	Physical Therapist Aides	160	0.3%
29-2032	Diagnostic Medical Sonographers	160	0.3%
29-2099	Health Tech, All Other	160	0.3%
31-2011	OT Assts	140	0.2%
29-1064	Obstetricians and Gynecologists	140	0.2%
29-1065	Pediatricians, General	140	0.2%
29-1199	Health Diagnosing and Treating Practitioners,	140	0.2%
29-1066	Psychiatrists	130	0.2%
29-1041	Optometrists	120	0.2%
29-1124	Radiation Therapists	100	0.2%
29-9091	Athletic Trainers	100	0.2%
29-1125	Recreational Therapists	100	0.2%
29-2053	Psychiatric Technicians	100	0.2%
29-2033	Nuclear Medicine Technologists	80	0.1%
29-2054	Respiratory Therapy Technicians	60	0.1%
29-9012	Occupational Health and Safety Technicians	50	0.1%
29-1081	Podiatrists	30	0.1%

Most of the healthcare job opportunities are typically found in the largest 20 occupations.

Figure 28 High-priority occupations highlighted.

The above tables reveal that the 20 largest healthcare occupations in Maine represent approximately 80 percent of employment. These occupations also represent most of the job opportunities—between 2004 and 2008 the 20 largest occupations accounted for 72 percent of the total increase in healthcare occupational employment.

## Occupational Wage Statistics

The average healthcare practitioner in Maine earned \$67,850 in 2008, a substantial premium to the statewide average wage of \$37,669. Healthcare support workers earned \$25,334 on average in 2008, 33 percent less than the average statewide mean wage. The substantial education and training requirements for doctors, dentists and other healthcare practitioners are a significant contributing factor to the premium wages earned in these occupations.

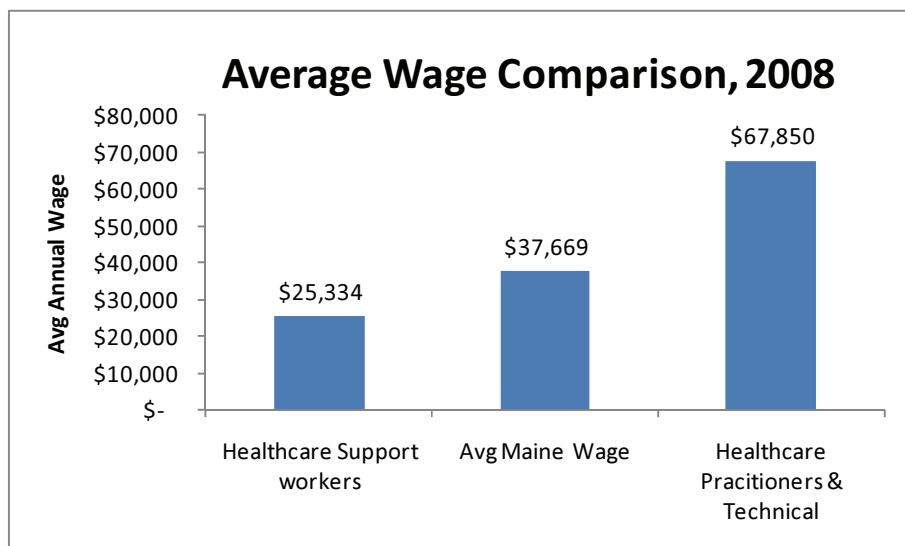


Figure 29

Wage statistics for all healthcare occupations in Maine and the US are detailed in figure 30. Occupations are ranked according to the highest paid in Maine in 2008 and high-priority occupations are highlighted.



# Healthcare Occupational Wage Statistics

SOC Code	Occupation	Mean Hourly Wage, 2008		
		Maine	USA	% Difference
29-1067	Surgeons	\$108.8	\$99.4	9%
29-1064	Obstetricians and Gynecologists	\$99.2	\$92.7	7%
29-1021	Dentists, General	\$86.9	\$74.2	17%
29-1066	Psychiatrists	\$82.1	\$74.1	11%
29-1061	Anesthesiologists	\$79.1	\$95.0	-17%
29-1069	Physicians and Surgeons, All Other	\$78.3	\$79.3	-1%
29-1065	Pediatricians, General	\$74.7	\$73.7	1%
29-1063	Internists, General	\$73.1	\$85.0	-14%
29-1062	Family and General Practitioners	\$72.8	\$77.6	-6%
29-1081	Podiatrists	\$57.7	\$60.5	-5%
29-1051	Pharmacists	\$54.1	\$50.1	8%
29-1041	Optometrists	\$48.5	\$50.6	-4%
29-1199	Health Diagnosing and Treating Practitioners, All Other	\$41.4	\$37.8	10%
29-1071	Physician Assistants	\$40.7	\$39.2	4%
29-1011	Chiropractors	\$34.6	\$39.1	-11%
<b>29-0000</b>	<b>Healthcare Practitioners and Technical Occupations</b>	<b>\$32.6</b>	<b>\$32.6</b>	<b>0%</b>
29-2033	Nuclear Medicine Technologists	\$32.4	\$32.4	0%
29-1121	Audiologists	\$32.1	\$31.5	2%
29-2032	Diagnostic Medical Sonographers	\$31.2	\$30.1	4%
29-1123	Physical Therapists	\$31.2	\$35.8	-13%
29-9011	Occupational Health and Safety Specialists	\$30.9	\$30.3	2%
29-1124	Radiation Therapists	\$30.1	\$36.3	-17%
29-2021	Dental Hygienists	\$29.0	\$32.2	-10%
29-1111	Registered Nurses	\$28.6	\$31.3	-9%
29-2034	Radiologic Technologists and Technicians	\$26.9	\$25.6	5%
29-1122	Occupational Therapists	\$26.2	\$32.7	-20%
29-1127	Speech-Language Pathologists	\$25.9	\$31.8	-19%
29-1126	Respiratory Therapists	\$25.4	\$25.6	-1%
	<i>Cont'd next page</i>			

Healthcare Occupational Wage Statistics, Cont'd.				
SOC Code	Occupation	Mean Hourly Wage, 2008		
		Maine	USA	% Difference
29-2031	Cardiovascular Technologists and Technicians	\$25.4	\$23.4	9%
29-9099	Healthcare Practitioners and Technical Workers, All Other	\$25.1	\$24.3	3%
29-2011	Medical and Clinical Laboratory Technologists	\$24.9	\$26.0	-4%
29-1129	Therapists, All Other	\$24.9	\$26.3	-5%
29-1031	Dietitians and Nutritionists	\$23.1	\$24.8	-7%
29-2054	Respiratory Therapy Technicians	\$21.9	\$21.0	4%
29-2099	Health Technologists and Technicians, All Other	\$21.2	\$19.9	6%
31-2021	Physical Therapist Assistants	\$19.8	\$22.3	-11%
29-2061	Licensed Practical and Licensed Vocational Nurses	\$19.1	\$19.3	-1%
29-9012	Occupational Health and Safety Technicians	\$18.8	\$22.8	-18%
29-2055	Surgical Technologists	\$18.5	\$19.3	-4%
29-2012	Medical and Clinical Laboratory Technicians	\$17.6	\$17.9	-2%
29-1125	Recreational Therapists	\$16.9	\$19.2	-12%
31-9091	Dental Assistants	\$16.3	\$16.0	2%
31-2011	Occupational Therapist Assistants	\$15.8	\$23.3	-32%
29-2081	Opticians, Dispensing	\$15.5	\$16.9	-8%
31-9094	Medical Transcriptionists	\$15.2	\$15.8	-4%
29-2071	Medical Records and Health Information Technicians	\$15.1	\$15.9	-4%
29-2051	Dietetic Technicians	\$14.1	\$13.3	7%
31-9092	Medical Assistants	\$13.9	\$14.0	0%
31-1013	Psychiatric Aides	\$13.7	\$13.1	5%
29-2041	Emergency Medical Technicians and Paramedics	\$13.6	\$15.4	-11%
31-9093	Medical Equipment Preparers	\$13.6	\$14.1	-4%
29-2053	Psychiatric Technicians	\$13.0	\$15.5	-16%
29-2052	Pharmacy Technicians	\$13.0	\$13.7	-5%
31-9099	Healthcare Support Workers, All Other	\$12.8	\$14.7	-13%
31-0000	<b>Healthcare Support Occupations</b>	<b>\$12.2</b>	<b>\$12.7</b>	<b>-4%</b>
31-2022	Physical Therapist Aides	\$11.6	\$11.9	-3%
31-1012	Nursing Aides, Orderlies, and Attendants	\$11.3	\$11.8	-5%
31-1011	Home Health Aides	\$10.8	\$10.3	4%
31-9095	Pharmacy Aides	\$10.2	\$10.3	-1%

Figure 30

- In 2008, compensation for Maine's healthcare occupational workforce was in line with average remuneration for healthcare workers across the US.
  - 2008 Maine healthcare practitioner mean and median hourly wage was \$32.6 and \$27.0, respectively. Across the nation the mean and median wage for healthcare practitioners was \$32.6 and \$27.2, respectively.

- 2008 healthcare support worker mean and median wage, Maine: \$12.18 and \$11.6, respectively. In 2008 mean and median wages for US healthcare support workers was \$12.66 and \$11.8, respectively.
- Despite average compensation for healthcare professionals in Maine being comparable to the national average wage for healthcare workers...
  - 25 percent of Maine's healthcare occupations had average compensation that was 10 percent or more below the national average wage for that field, while only three occupations (dentists, psychiatrists, health diagnosing and treating practitioners, all other) paid 10 percent or more above the national average.
- Maine healthcare occupations with the largest negative wage differentials compared to the US were:
  - Occupational therapist assistants: -32 percent.
  - Occupational therapists: -20 percent. Occupational therapists in Maine were the second lowest paid in the country in 2008.
  - Speech-language pathologists: -19 percent. Average mean wages for speech pathologists in Maine in 2008 ranked 43<sup>rd</sup> out of 51 reporting states.
  - Anesthesiologists: -17 percent.
  - Radiation therapists: -17 percent. In 2008 average mean wages in Maine for radiation therapists ranked 38<sup>th</sup> out of 46 reporting states.
  - Internists, general: -14 percent. In 2008 internists in Maine had the fifth lowest wages paid of all reporting US states.
- Other points:
  - Four of the top five highest paid healthcare occupations in Maine paid more than the US average wage for those respective occupations.
  - Dentists were the healthcare occupation in Maine with greatest wage premium to the nation (+17 percent). Dentists working in Maine were the fifth highest paid of all states in the country.
  - Pharmacists in Maine were the second highest paid of all states in the country.
  - Surgeons in Maine had the highest average wage for all states in the country that data was available on (38 states).

Labor supply and demand are often the primary determinants of interstate occupational wage differentials for comparably experienced and trained individuals. If health practitioners in one market earn substantially more than comparably trained and experienced practitioners in another

market, this is a good indication that excess demand for practitioners exists in the higher wage market. In the third section of this report, *Healthcare Workforce Development Challenges for Maine*, wage differentials between healthcare occupations in Maine and the US are analyzed to help identify which occupations may have shortages or surpluses of qualified workers.

## Occupational Employment Forecasts

CWRI produces 10 year employment projections for every Maine industry and over 800 occupations, including 60+ healthcare occupations. These forecasts are produced every other year and currently address the 2006-2016 period. The methodology employed in making these forecasts assumes the status quo in terms of the way care is organized, delivered and paid for.

Through the current forecast period, CWRI expects healthcare sector employment growth to remain robust, generating 50 percent of all new jobs in Maine. Nearly one out of every three new jobs in Maine and 20 of the 40 fastest growing occupations are expected to be healthcare occupations.

Figure 31 highlights employment projections for high-priority occupations; forecasts for every healthcare occupation may be found in the Appendix V. Also note that employment estimates in this series include the estimated number of self employed in each occupation.

Employment and Job Openings in Maine in 2006 and Projected 2016 High Priority Occupations									
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings			Minimum Education/Training Requirement
		2006	2016	Net	Percent	Growth	Replacement	Total	
29-1111	Registered Nurses	14,048	17,045	2,997	21.3%	300	232	532	Associate degree
31-1012	Nursing Aides, Orderlies, and Attendants	10,039	10,816	777	7.7%	78	90	168	Postsecondary vocational training
31-1011	Home Health Aides	4,949	5,957	1,008	20.4%	101	44	145	Short-term on-the-job training
29-2052	Pharmacy Technicians	1,562	2,072	510	32.7%	51	48	99	Moderate-term on-the-job training
29-1051	Pharmacists	1,169	1,431	262	22.4%	26	20	46	First professional degree
29-1069	Physicians and Surgeons, All Other	1,435	1,600	165	11.5%	17	26	43	First professional degree
29-2021	Dental Hygienists	977	1,175	198	20.3%	20	19	39	Associate degree
29-1123	Physical Therapists	985	1,215	230	23.4%	23	12	35	Master's degree
29-2055	Surgical Technologists	443	561	118	26.6%	12	14	26	Postsecondary vocational training
29-1071	Physician Assistants	594	728	134	22.6%	13	8	21	Master's degree
29-1062	Family and General Practitioners	781	838	57	7.3%	6	14	20	First professional degree
29-1122	Occupational Therapists	680	766	86	12.6%	9	10	19	Master's degree
29-1126	Respiratory Therapists	493	607	114	23.1%	11	7	18	Associate degree
29-1127	Speech-Language Pathologists	700	721	21	3.0%	2	14	16	Master's degree
29-1063	Internists, General	499	527	28	5.6%	3	9	12	First professional degree
29-1067	Surgeons	516	543	27	5.2%	3	9	12	First professional degree
29-1021	Dentists, General	505	506	1	0.2%	0	10	10	First professional degree
29-1066	Psychiatrists	209	227	18	8.6%	2	4	6	First professional degree
29-1124	Radiation Therapists	107	135	28	26.2%	3	2	5	Associate degree
29-1061	Anesthesiologists	179	201	22	12.3%	2	3	5	First professional degree
29-1065	Pediatricians, General	169	181	12	7.1%	1	3	4	First professional degree
29-1064	Obstetricians and Gynecologists	119	133	14	11.8%	1	2	3	First professional degree
29-2054	Respiratory Therapy Technicians	77	79	2	2.6%	0	2	2	Associate degree

Figure 31

The 10 healthcare occupations expected to grow the fastest in Maine from 2006 through 2016 are<sup>17</sup>:

10. Physician assistants
9. Respiratory therapists
8. Physical therapists
7. Medical and clinical lab technologists
6. Cardiovascular tech
5. Radiation therapists
4. Surgical tech
3. Pharmacy tech
2. Physical therapist assistants
1. Medical assistants

In the third section of this report the number of expected annual job openings for each occupation is compared to the number of program completers in each area of healthcare training. Of the 10 occupations identified above, medical and clinical lab technologists stand out as having the greatest insufficiency of program completers relative to expected job openings.<sup>18</sup> Physical therapists and physical therapist assistants also register as not having a sufficient number of completers to meet expected job demand, but the margin is less egregious than it is with medical and clinical lab technologists. This analysis is available in the section, “Occupational Program Completer Analysis.”

More occupational information such as job descriptions, employment outlooks, education requirements, schools in the state offering related educational programs, program completers by school, degree and gender and help wanted online advertising trends may be found in Appendix VI.

# HEALTHCARE WORKFORCE DEVELOPMENT CHALLENGES FOR MAINE

An essential component to meeting the growing demand for healthcare services statewide is ensuring that Maine has a sufficient number of workers with the appropriate mix of occupations, in the required locations. Maine faces a number of unique, long-term challenges with respect to these issues: There are indications of worker shortages in some occupations and in the state's rural areas, the resident population is aging and consuming higher and higher amounts of healthcare services, the healthcare workforce is nearing the age of retirement. With regard to some of these challenges, the economic downturn has issued a short-term reprieve; hiring demand for healthcare workers has subsided and with individuals remaining in their jobs for longer periods, the supply of healthcare workers has increased. In this respect the economic downturn makes the aforementioned workforce challenges appear less urgent. Considering, however, that 1) the economy is cyclical, 2) the workforce challenges faced are structural and 3) the lead times associated with educating, training and hiring workers in many healthcare occupations are often measured in years, the current economic environment should be viewed as an opportunity to implement the initiatives necessary for a successful future. In order for Maine to develop a healthcare workforce that will meet the demands of the next generation, preparations need to be made now.

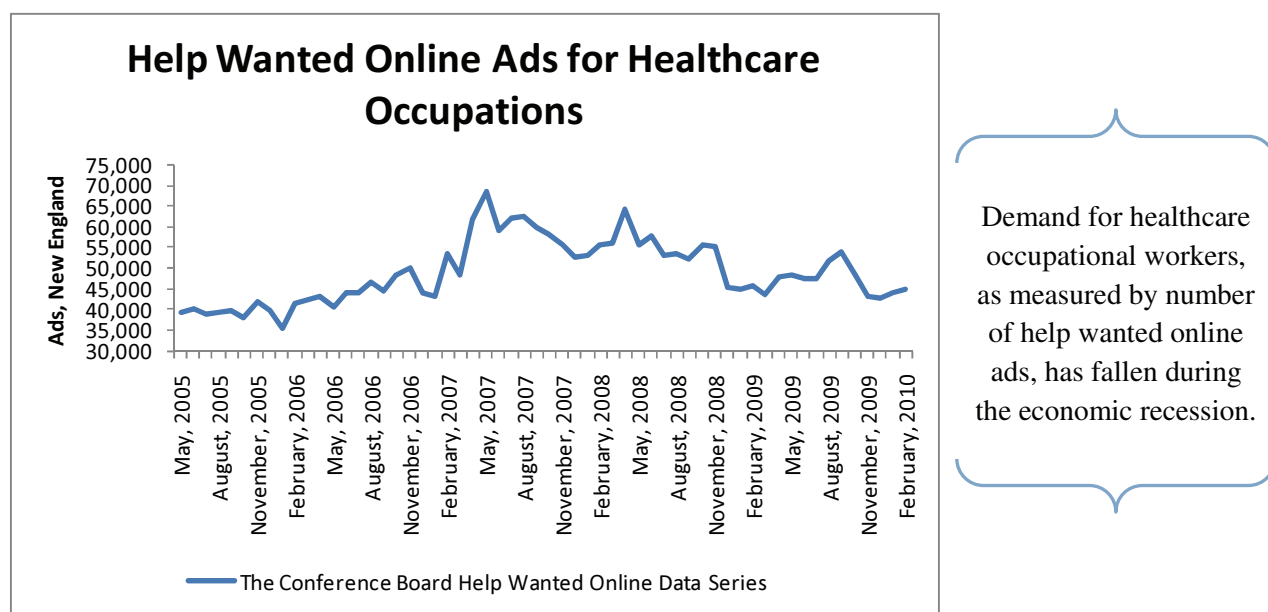


Figure 32 Source: Wanted Analytics<sup>19</sup>

While Maine faces a number of healthcare workforce development challenges, three primary issues that will be covered in this report are: 1) identifying shortages of qualified workers by occupation and region, 2) the impact of this state's aging population on the demand for physicians and 3) the aging of the healthcare workforce. Each of these challenges will be discussed.

# Identifying Healthcare Occupational Shortages in Maine

Accessible and affordable healthcare services require an adequate supply of healthcare professionals. Defining what constitutes ‘adequate’ can be a complex issue, as participants in the exchange for healthcare services typically have different sets of expectations and priorities regarding the quantity, type and price of healthcare services that *should be* readily available. Moreover, determining a given supply of something to be sufficient or insufficient requires, by definition, comparisons against a benchmark, or standard, and often there is no consensus as to which standard is the most appropriate. In general, two different frameworks have historically been used to define what constitutes an adequate capacity of healthcare services: needs- and market-based approaches.<sup>20</sup>

- A needs-based approach seeks to identify what level of medical services and how many practitioners are required to effectively serve a population. This approach looks at issues such as the number of minutes required by a practitioner per patient office visit, how many patients a practitioner can see per year, etc., and builds up to required number of practitioners per population. A needs-based approach yields practical and easy to understand metrics for defining standard levels of healthcare practitioners required. In addition, once a baseline metric for the required number of practitioners per capita is established, this ratio can remain relatively stable over time. The primary criticism of this approach is that it defines shortages independent of market demand. In addition, by defining the needs of a population based on expert opinion, this method can be subject to bias from the persons that determine what levels of service are adequate.
- In a market-based approach the level of healthcare services that are required are determined by economic factors. An insufficient supply of practitioners will manifest itself in a number of ways: patients will have difficulty finding open practices, employers will have unfilled positions for hire and premium wages will be offered. Economic theory teaches that higher wages will draw an increased supply of labor which will drive down compensation levels until practitioners earn a fair economic profit. High start-up costs, transaction costs, excessive regulation and the structure of healthcare payment systems can inhibit the market mechanism from reaching equilibrium, however. Market-based approaches are also subject to changing economic conditions—real time indicators of shortages *now* may not be present in the future. As workforce training programs often involve years of planning and commitment, a certain amount of judgment is required in evaluating and applying market-based data.

Discussions of healthcare workforce adequacy also involve a geographic element. An adequate supply of practitioners at the state level does not necessarily imply that these workers will be distributed proportionally throughout the state.

With these issues in mind CWRI utilized a variety of needs, market-based and other workforce analysis tools in order to gain insight into the adequacy of healthcare labor supply in Maine. The following data and analyses were evaluated and/or performed:

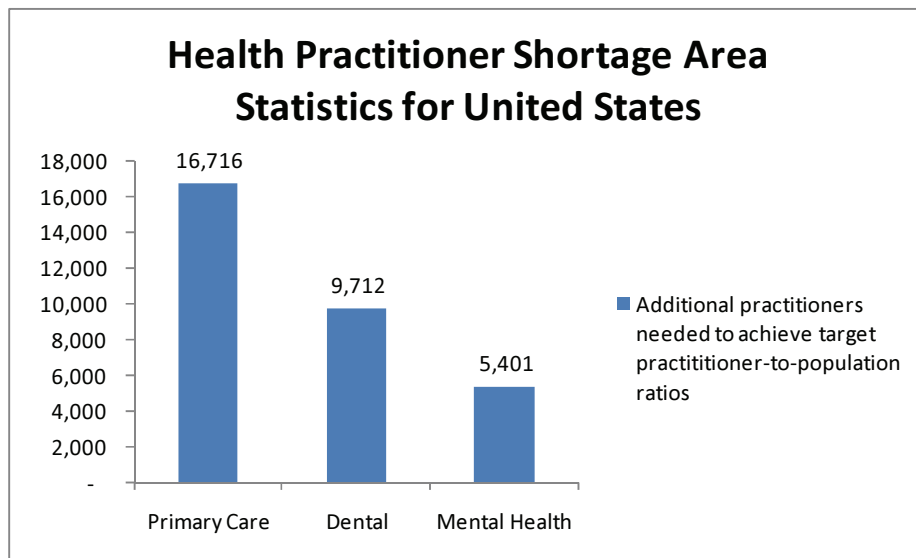
- US Department of Health and Human Services (US DHHS) healthcare practitioner shortage statistics for the nation and state of Maine.
- Per capita analysis of Maine's healthcare workforce versus the nation.
- Hiring demand versus labor supply analysis (supply/demand ratios).
- 2009 Maine Job vacancy survey.
- Analysis of occupational wage differentials versus other states.
- Analysis of the distribution of healthcare workers throughout Maine.
- Program completer trends are also reviewed and contrasted with expected job openings in order to assess how existing occupational shortages and surpluses may change over time.

Each analysis will be discussed separately. The reader should note that each analytical tool has its own set of strengths and weaknesses. As a result, it is best to interpret the results of each analysis not in isolation but as a compliment to the others. At the end of this section the results will be summarized into key findings.

### *National and State of Maine Healthcare Practitioner Shortage Statistics*

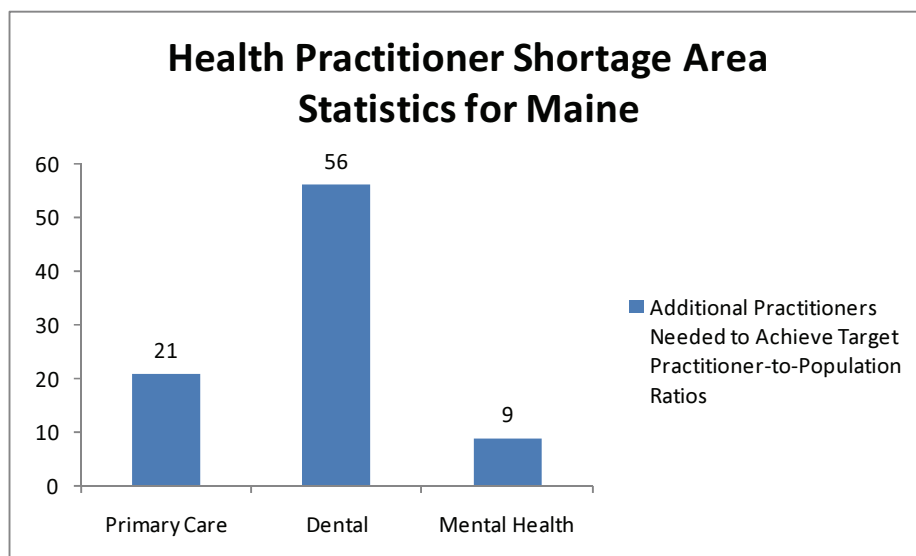
The US Department of Health and Human Services (DHHS) has formulated target population-to-practitioner guidelines and publishes healthcare practitioner shortage statistics for the nation as well as for each individual state.<sup>21</sup> DHHS practitioner shortage statistics use a needs-based approach to show the number of primary care, dental and mental health practitioners that are required for the nation or a state to resolve its worker shortage in that particular field. This data indicates that nationally, the number of primary care physicians needed is greater than the number of dentists and mental health professionals combined (figure 33). With regard to Maine, the US DHHS has determined that more dentists are required than primary care physicians and mental health professionals (figure 34).





The USA needs 16,716 more primary care physicians in order to resolve its shortage of doctors, according to US DHHS statistics.

Figure 33 Source: Office of Shortage Designation, US DHHS



In Maine, the number of dentists required to achieve target practitioner-to-population ratios is greater than it is for primary care physicians or mental health workers, according to DHHS shortage statistics.

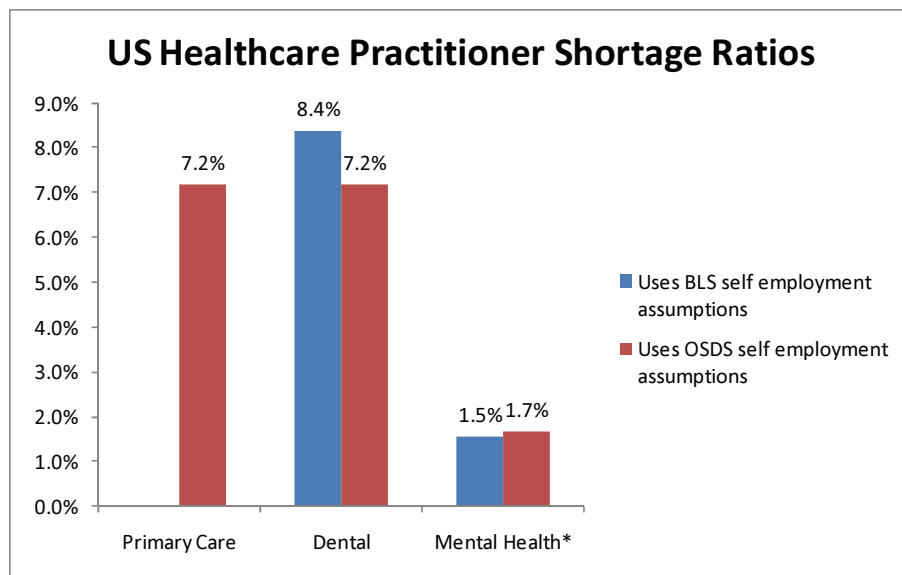
Figure 34 Source: Office of Shortage Designation, US DHHS

- Primary care practitioners represent full time equivalent (FTE), non-Federal Medical Doctors (MDs) and Doctors of Osteopathy (DOs) providing direct patient care who practice in one of the four primary care specialties: general or family practice, general internal medicine, pediatrics and obstetrics and gynecology.<sup>22</sup>
- Dental practitioners are FTE, non-Federal, active dentists.
- Mental health practitioners are psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists and marriage and family therapists.

- US DHHS Target population-to-practitioner ratios are 2,000:1 for primary care, 3,000:1 for dental and 10,000:1 for mental health workers as defined above.

CWRI compared the above shortage statistics to the number of employed in each occupation in order to determine which field of practice—primary care, dental or mental health—has the most acute shortage across the nation and in Maine.<sup>23</sup>

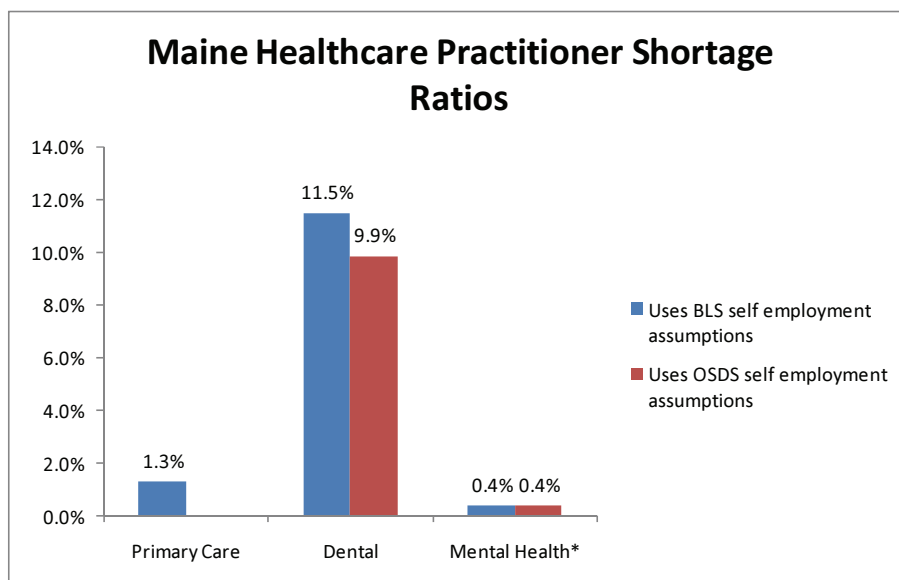
According to this analysis, the shortage for dentists and primary care physicians across the nation is more acute than it is for mental health practitioners (figure 35). Depending on the assumption used for self employment among dentists, this field may have the greatest shortage of practitioners in the nation.<sup>24</sup>



The US has a greater shortage of primary care and dental practitioners than it does for mental health workers, according to this analysis.

Figure 35

The same analysis for Maine reveals that the shortage for dentists is substantially larger than it is for primary care physicians and mental health providers. Also, the shortage for dentists is greater in Maine than in the USA. The shortage for primary care physicians and mental health practitioners is less acute in Maine relative to the nation (figure 36).



Maine has a greater shortage of dentists than for primary care physicians and mental health providers, according to this analysis.

Figure 36

In interpreting these results one must note that since DHHS groups multiple occupations in the primary care and mental health categories, it is possible that an individual occupation within either of these groups could have a greater shortage than that of its group average. Within the mental health category, for example, there may be a large shortage of psychiatrists that is obscured by surpluses in other mental health occupations. Also, this analysis uses baseline target population-to-practitioner ratios. Areas with particularly high healthcare needs may require different target ratios.

### *Per Capita Analysis*

As previously noted, identifying workforce shortages involves comparisons against a benchmark, or standard. Per capita analysis is one workforce research tool that can be used to benchmark occupational labor supply in a smaller area to that of a larger one. This analysis compares the number of workers in each healthcare occupation in Maine to that of the US, on a per capita basis.

Example:

- In Maine there were 1,316,456 people and 14,050 registered nurses in 2008, or 93.7 people for every RN. In the US there were 119 people per RN.
- These figures can be put into a location quotient (LQ) which summarizes the extent to which Maine has more or less RNs than the nation, per capita. The LQ for RNs is  $119/93.7$ , or 1.27.
  - LQs above 1.0 indicate more workers per population in Maine than the US, below 1 indicates fewer workers per capita in Maine compared to the US.

- With an LQ of 1.27, there were 27 percent more RNs per capita in Maine than the US.

Figure 37 displays the LQ ratios for every healthcare occupation in Maine. The data indicates that Maine has done a good job of developing a primary and secondary healthcare workforce. Additional efforts are needed, however, in the development of many of the smaller, more specialized occupations. High-priority occupations are highlighted in yellow.

## Location Quotient for Healthcare Occupations

Occupation	Location Quotient	Pct. Of Workfor
Psychiatric Technicians	0.42	0.2%
Health Tech, All Other	0.49	0.3%
LPN	0.54	2.9%
Healthcare Support Workers, All Other	0.60	0.8%
Physical Therapist Assistants	0.72	0.3%
Diagnostic Medical Sonographers	0.76	0.3%
Podiatrists	0.76	0.1%
Massage Therapists	0.80	0.3%
Cardiovascular Tech	0.81	0.3%
Physical Therapist Aides	0.81	0.3%
Dental Assistants	0.82	1.8%
Healthcare Practitioners, All Other	0.84	0.3%
Nuclear Medicine Technologists	0.87	0.1%
Opticians, Dispensing	0.91	0.4%
Respiratory Therapy Technicians	0.91	0.1%
Health Diagnosing and Treating Practitioners, All Other	0.97	0.2%
Pharmacy Aides	0.97	0.4%
Dentists	0.98	0.6%
Optometrists	1.01	0.2%
Medical Assts	1.03	3.6%
Medical Records and Health Information Technicians	1.04	1.3%
Pharmacists	1.05	2.1%
Dietitians and Nutritionists	1.06	0.4%
Occupational Health and Safety Specialists	1.06	0.4%
Pediatricians, General	1.06	0.2%
Recreational Therapists	1.09	0.2%
Physicians and Surgeons, All Other	1.10	2.2%
Med/ Clinical Lab Technicians	1.10	1.2%
Pharmacy Tech	1.11	2.7%
Respiratory Therapists	1.21	0.9%
Medical Equipment Preparers	1.22	0.4%
Surgical Technologists	1.23	0.8%
Occupational Health and Safety Technicians	1.27	0.1%
RNs	1.28	24.0%
Medical/ Clinical Lab Technologists	1.28	1.6%
OT Assts	1.33	0.2%
Physical Therapists	1.34	1.7%
<i>Cont'd next page</i>		

The majority of healthcare occupations in Maine have LQs above 1, indicating more workers per capita than the nation.

Location Quotient for Healthcare Occupations		
Occupation	Location Quotient	Pct. Of Workfor
Home Health Aides	1.38	9.1%
Veterinarians	1.39	0.5%
Radiologic Tech	1.39	2.2%
EMT	1.41	2.2%
Psychiatrists	1.41	0.2%
Dental Hygienists	1.49	1.9%
Obstetricians and Gynecologists	1.52	0.2%
Athletic Trainers	1.52	0.2%
Chiropractors	1.52	0.3%
Radiation Therapists	1.52	0.2%
Speech-Language Pathologists	1.54	1.2%
Occupational Therapists	1.54	1.1%
Nursing Aides, Orderlies	1.58	16.6%
Family and General Practitioners	1.61	1.3%
Veterinary Tech	1.61	0.9%
Dietetic Technicians	1.61	0.3%
Anesthesiologists	1.86	0.5%
Internists, General	1.92	0.6%
Surgeons	1.97	0.7%
Vet. assts	2.15	1.2%
Medical Transcriptionists	2.17	1.4%
Physician Assistants	2.31	1.2%
Psychiatric Aides	3.88	1.7%

Figure 37

- The majority of healthcare occupations in Maine have LQs above 1, indicating more workers than the nation on a per population basis. LQs for various groupings of occupations are as follows:
  - The LQ for the entire Maine healthcare workforce is 1.24.
  - Healthcare practitioners: 1.16.
  - Support workers LQ: 1.36.
  - 20 Largest occupations: 1.27; these occupations represent 81 percent of the entire healthcare workforce in Maine. The remaining 40+ occupations, representing 19 percent of the jobs, have an LQ of 1.12.
  - Of the 23 high-priority occupations, 21 have LQs above 1.0. The LQs for respiratory therapist technicians and dentists were .91 and .98, respectively.<sup>25</sup>

It is important to note that per capita and location quotient analyses define excesses and shortages of workers relative to the national average. As such, if a national shortage exists in an occupation and Maine has more workers in that field than the nation per capita (LQ above 1.0), Maine may still have a shortage in that occupation on an *absolute* basis. Put differently, if there

are an insufficient number of practitioners at the national level, there may also be a shortage at the statewide level—even if the LQ is above 1.0.<sup>26</sup>

One of the strengths of per capita analysis is that relatively few assumptions are required. Per capita analysis is somewhat limited, however, in that it only measures the supply of workers per population; demand is not considered. As such, this analysis does not indicate what levels of healthcare workers are sufficient for a state's particular health and demographic characteristics.<sup>27</sup> On the other hand, one must consider that in healthcare supply drives demand and at some point the efficiency of the healthcare system peaks. More healthcare supply does not necessarily mean better and more efficient services. The surplus of healthcare workers identified in this analysis may be the result of supply driving demand. Finally, per capita analysis does not delve into the distribution of the workforce throughout the state. Distributional issues are covered in the section, *Geographic Distribution of Maine's Healthcare Workforce*.

### *Help Wanted Online Supply/Demand Ratios*

Another benchmark for assessing occupational shortages, and one that addresses some of the limitations of per capita analysis, is the Supply/Demand Ratio (S/D).<sup>28</sup> In this analysis, S/D ratios indicate which states have the greatest hiring demand for particular occupations. Hiring demand is defined as the number of online job ads divided by the number of employed in an occupation. If the hiring demand for an occupation in a state is above the national average this suggests tighter than average labor market conditions and a relative shortage of workers in that location.

Consider the following:

- In Maine there are 130 employed psychiatrists, and there were 27 online job ads for psychiatrists during the summer of 2009. The number of ads per psychiatrist in Maine was .21, for the nation it was .07.
- The S/D ratio for psychiatrists in Maine is .21/.07 multiplied by 100 or 291.
  - For any occupation, the national S/D ratio will equal 100. For a state, S/D ratios above 100 indicate greater than average hiring demand and tighter than average labor market conditions than the nation. S/D ratios below 100 indicate less hiring demand than the nation.
  - With an S/D ratio of 291, hiring demand for psychiatrists in Maine is nearly three times the national average.

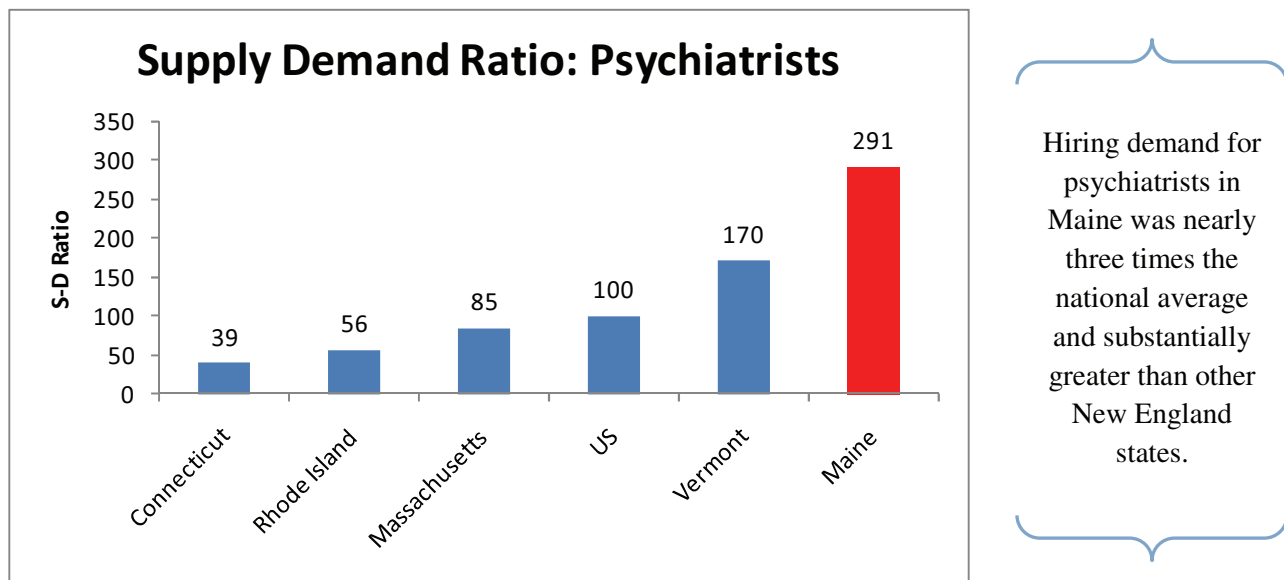


Figure 38

Supply-demand ratios for 29 of the largest healthcare occupations in Maine, representing 85 percent of total healthcare occupational employment were analyzed. Many healthcare occupations had S/D ratios above 100, indicating greater than average demand for workers. These results are displayed in Figure 39.



## S-D Ratios for Healthcare Occupations

Occupation	S-D Ratio	Pct. of Workforce
Psychiatrists	291	0.2%
Pharmacists	265	2.1%
Physicians and Surgeons, All Other	245	2.2%
Anesthesiologists	217	0.5%
Surgeons	200	0.7%
Nursing Aides	161	16.6%
Internists	161	0.6%
Family and General Practitioners	154	1.3%
Pediatricians	150	0.2%
LPN	144	2.9%
Respiratory Therapists	139	0.9%
Physical Therapists	136	1.7%
EMT	125	2.2%
Pharmacy Tech	110	2.7%
RNs	107	24.0%
OB/GYN	99	0.2%
Physician Assistants	95	1.2%
Speech-Language Pathologists	92	1.2%
Dentists	91	0.6%
Radiologic Tech	88	2.2%
Occupational Therapists	88	1.1%
Medical Assts	85	3.6%
Medical/Clinical Lab Technicians	76	1.2%
Dental Hygienists	65	1.9%
Home Health Aides	64	9.1%
Medical/Clinical Lab Technologists	64	1.6%
Radiation Therapist	47	0.2%
Surgical Tech	43	0.8%
Dental Assistants	24	1.8%

The S/D ratios for psychiatrists and pharmacists in Maine were the third highest in the country.

Figure 39 *High-priority occupations are highlighted in yellow.*

- 15 of the 29 occupations in figure 39 had S/D ratios above 100. These 15 occupations represented 59 percent of total healthcare employment in Maine in 2008. Thus, 15 healthcare occupations representing 59 percent of the labor force had hiring demand greater than the national average.

- 13 of the 22 high-priority occupations tested had S/D ratios greater than 100, indicating tighter than average labor market conditions for those occupations.
- The hiring demand for psychiatrists, pharmacists, physicians and surgeons, all other, anesthesiologists and surgeons in Maine was two to nearly three times the national average.

By incorporating hiring demand into the equation, S/D ratios go a step further than per capita analysis, which only considers the supply of labor per population. Whereas per capita analysis indicates whether or not an occupation has more or less supply per population compared to the nation, S/D ratios measure the extent to which labor supply is sufficient to meet hiring demand. The primary limitations of S/D ratios are that online ads do not represent the entirety of hiring demand, there are no adjustments made for ad quality and some markets may not rely as heavily on online job ads as others.<sup>29</sup>

### *Maine Job Vacancy Survey Analysis*

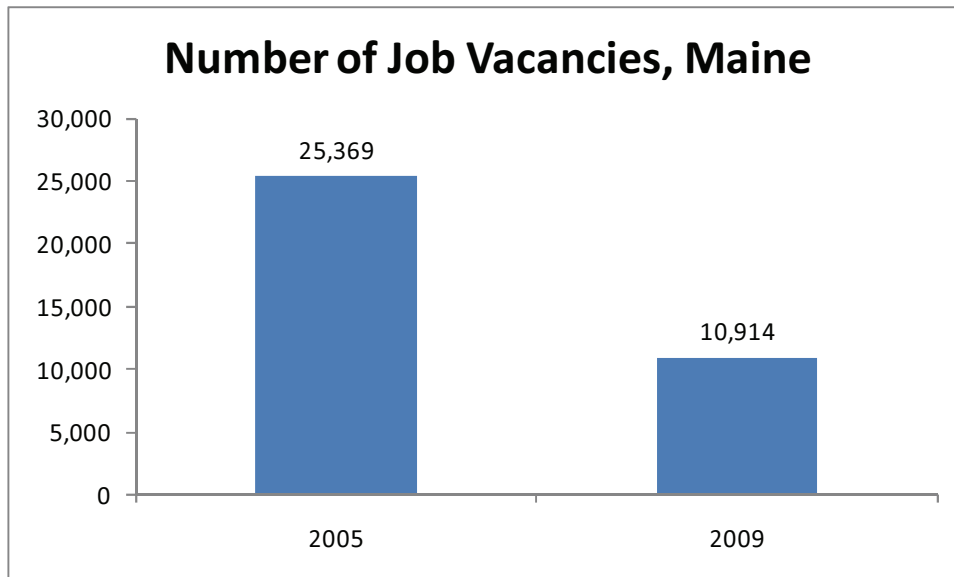
The job vacancy survey (JVS) is another tool for assessing occupational shortages. By providing estimates for the number of unfilled jobs by occupation, job vacancy surveys yield valuable information about labor supply and demand.

CWRI's 2009 Job Vacancy Survey (JVS) was a confidential phone survey of 3,137 Maine employers during the summer and fall months of 2009. Employers were asked a series of questions regarding if they were hiring, the type of position (and benefits) being offered as well as the minimum education and experience requirements for the advertised position. The survey response rate was 95.2 percent. For context, results from the 2009 JVS will be contrasted with CWRI's 2005 and 2002 job vacancy surveys. These earlier surveys were conducted during the spring months (April, May and June) and by mail.

This analysis will:

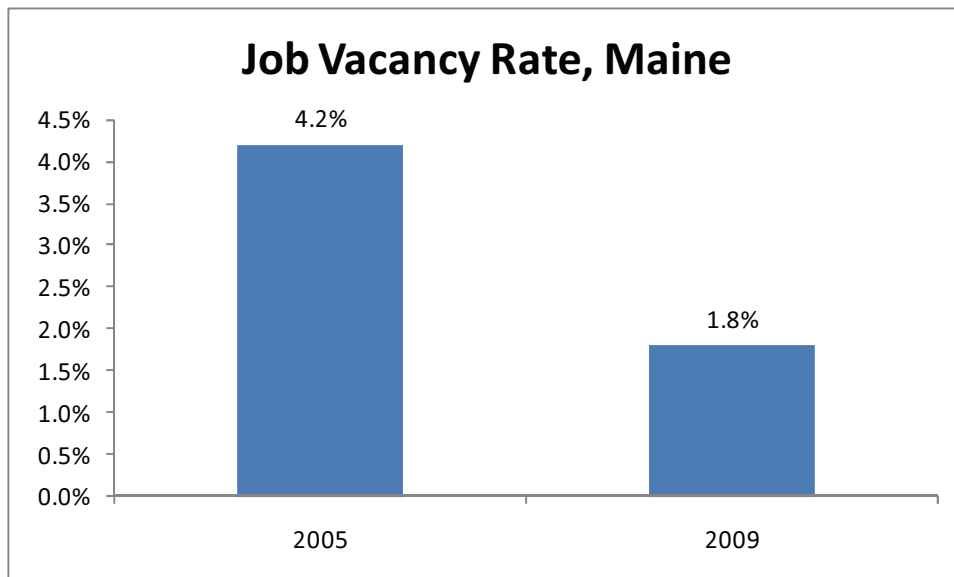
- 1) Review the JVS all-occupations results for total statewide job vacancies in Maine.
  - 2) Review the JVS results for healthcare practitioner and support occupations in aggregate.
  - 3) Summarize the results for healthcare practitioners and support workers at the occupational level.
1. There were an estimated 10,914 vacant jobs in Maine during the 2009 survey period. This represents a statewide vacancy rate of 1.8 percent.<sup>30</sup> CWRI's 2005 and 2002 surveys revealed vacancy rates of 4.2 percent and 3.9 percent, respectively. Thus, while the current level of unfilled jobs may seem high given the economic recession, these results are relatively low compared to surveys taken in stronger economic climates. The reader should

also note that even in the worst economic environments there will be vacant positions offered due to the natural turnover of employment.



The 2009 JVS revealed an estimated 10,914 vacant positions statewide.

Figure 40

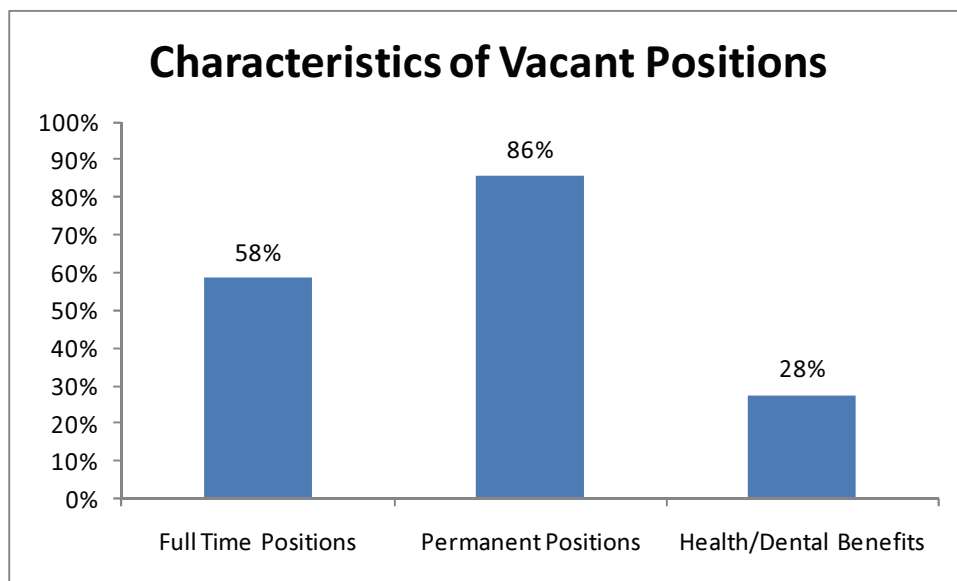


The 10,914 vacant positions represent a job vacancy rate of 1.8 percent.

Figure 41

Characteristics of the 10,914 statewide vacant positions are illustrated in figures 42, 43, 44, and 45.

Most of the statewide job vacancies were for permanent and/or full time positions. Nearly 30 percent offered some form of health and dental benefits.



Most of the statewide job vacancies were for permanent and/or full time positions. Nearly 30 percent offered some form of health and dental benefits.

Figure 42

Forty-one percent of the statewide vacant positions required no education. Twenty-six percent required beyond a high school education. (figure 43)

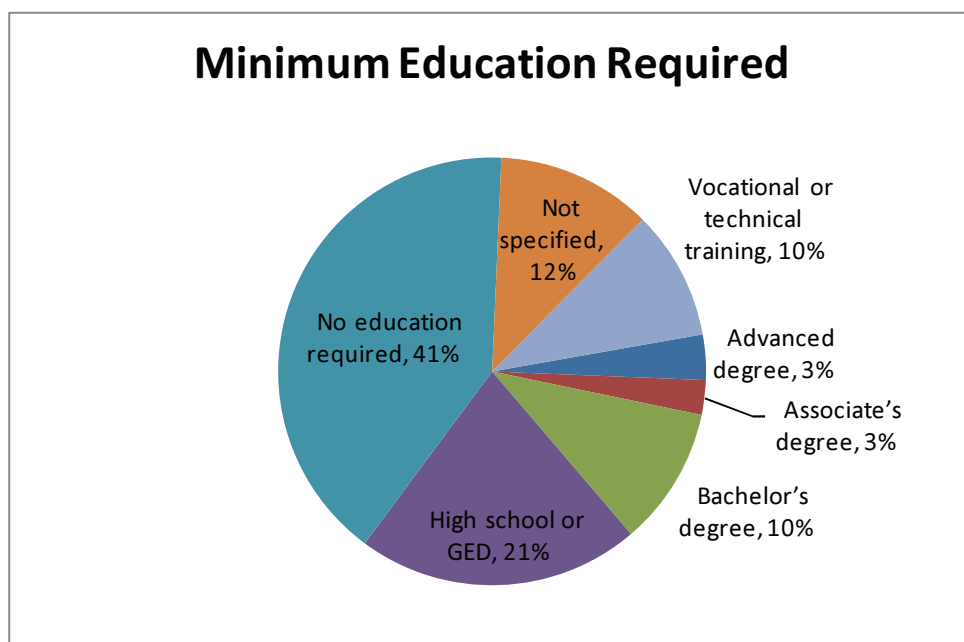


Figure 43

Thirty-six percent of the statewide vacant positions required no work experience. Forty-one percent required at least some related work experience. (figure 44).

## Minimum Experience Required

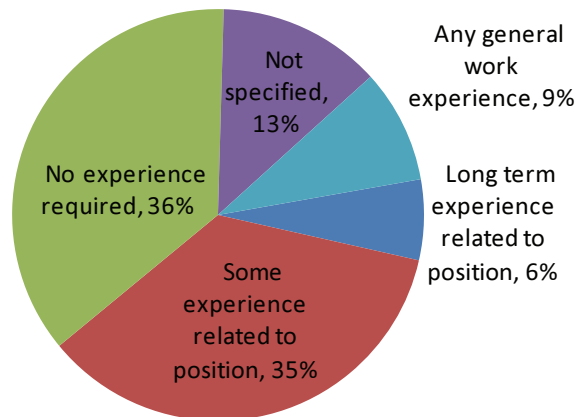


Figure 44

Over 50 percent of the statewide vacant positions were located in the three major metropolitan areas (figure 45).

## Job Vacancy Location

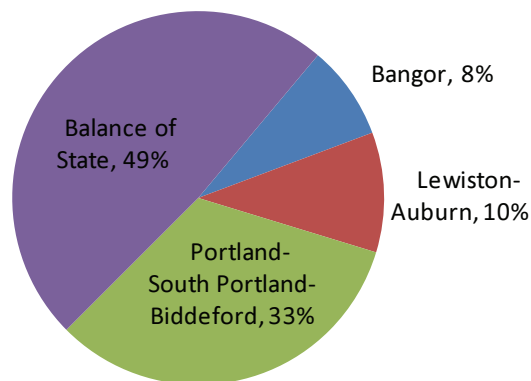
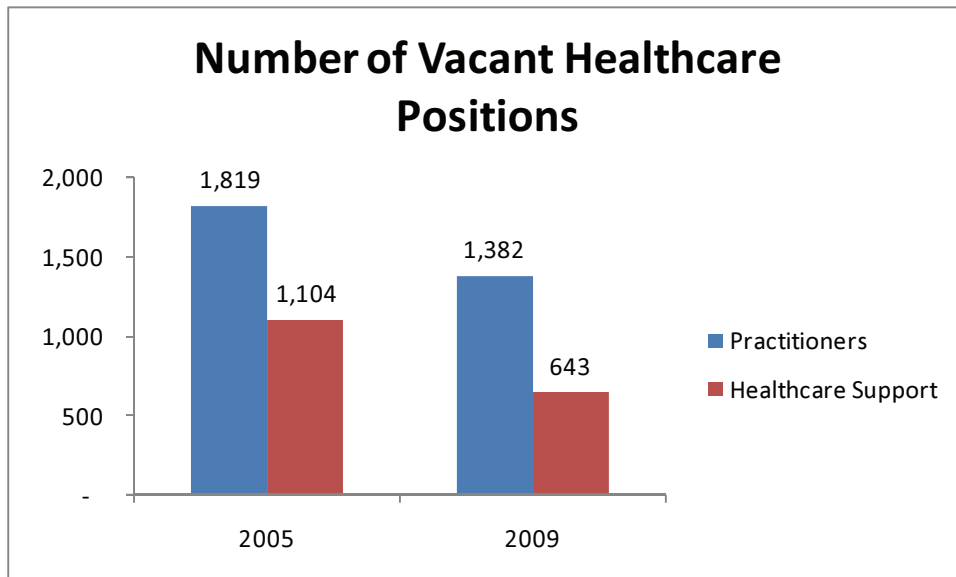


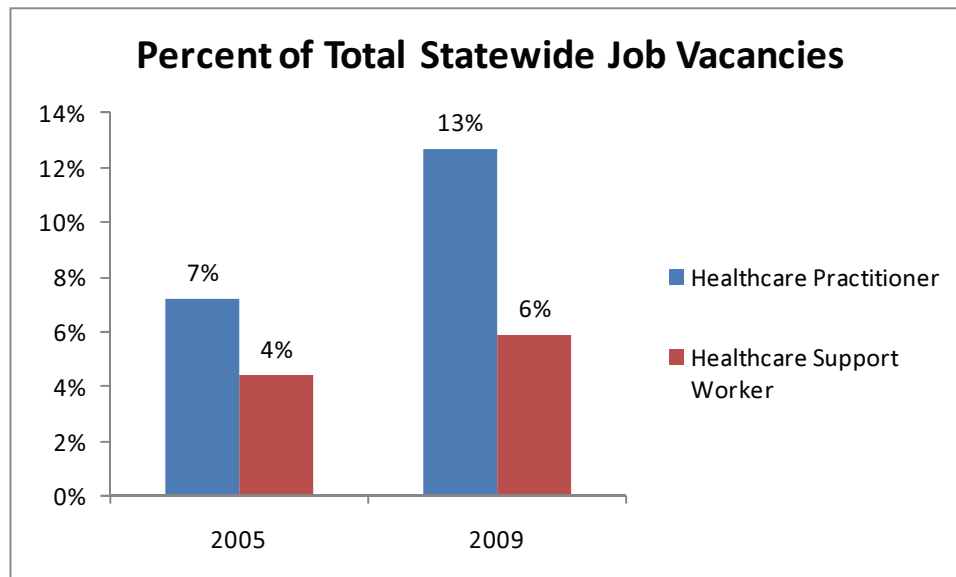
Figure 45

- Of the 10,914 statewide job vacancies in the 2009 JVS, 1,382 and 643 positions were for healthcare practitioners and support workers, respectively. Although the number of vacant healthcare positions declined from the 2005 JVS (figure 46), the proportion of total vacant positions that were healthcare related grew substantially (figure 47).



The number of vacant healthcare positions declined between the 2005 and 2009 JVS.

Figure 46



But the proportion of vacancies that were healthcare related increased.

Figure 47

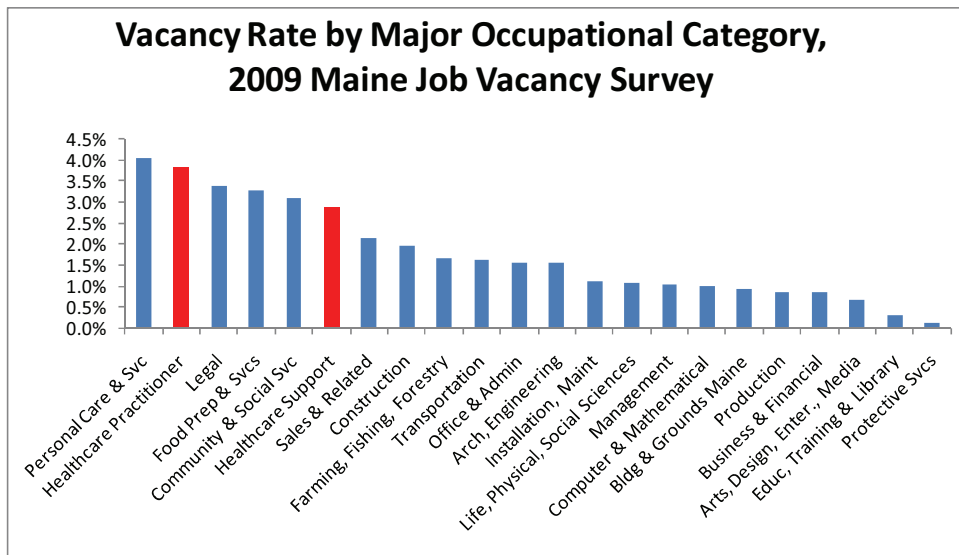
Healthcare's growing share of unfilled jobs reflects the sector's economic resilience; occupations that are more economically sensitive (i.e., sales & related) lost share of unfilled jobs (figure 48).

Maine Job Vacancy Survey					
Occupational Category	Number of Statewide Vacancies	Pct. Of Total Openings, 2009	Pct. Of Total Openings, 2005 Survey	2009 Vacancy Rate	2005 Vacancy Rate
Food Prep & Svcs	1,724	16%	14%	3.3%	6.4%
Office & Admin	1,598	15%	14%	1.6%	3.4%
<b>Healthcare Practitioner</b>	<b>1,382</b>	<b>13%</b>	<b>7%</b>	<b>3.8%</b>	<b>5.3%</b>
Sales & Related	1,300	12%	16%	2.1%	6.6%
Transportation	674	6%	7%	1.6%	3.8%
<b>Healthcare Support</b>	<b>643</b>	<b>6%</b>	<b>4%</b>	<b>2.9%</b>	<b>6.0%</b>
Construction	609	6%	5%	1.9%	4.4%
Personal Care & Svc	600	6%	6%	4.0%	11.6%
Community & Social Svc	377	3%	2%	3.1%	4.0%
Production	363	3%	4%	0.9%	2.3%
Management	303	3%	2%	1.0%	1.7%
Installation, Maint	299	3%	2%	1.1%	2.0%
Bldg & Grounds Maint.	198	2%	7%	0.9%	8.4%
Business & Financial	194	2%	1%	0.9%	1.5%
Arch, Engineering	147	1%	1%	1.5%	3.0%
Educ, Training & Library	129	1%	3%	0.3%	2.0%
Legal	128	1%	1%	3.4%	3.7%
Computer & Mathematical	84	1%	1%	1.0%	2.5%
Life, Physical, Social Sciences	52	0%	0%	1.1%	1.0%
Arts, Design, Enter., Media	51	0%	1%	0.7%	2.3%
Farming, Fishing, Forestry	42	0%	1%	1.7%	6.5%
Protective Svcs	14	0%	1%	0.1%	3.2%
Statewide	10,914			1.8%	4.2%

The vacancy rate for healthcare practitioners declined less than that of other occupations.

Figure 48

The vacancy rate for healthcare practitioners was the second highest of all occupations in the 2009 JVS. Only personal care and service occupations had a higher vacancy rate (four percent). The vacancy rate for healthcare support workers was the sixth highest in the state in 2009 and 2005.



Healthcare practitioner occupations had the second highest vacancy rate in the 2009 JVS. In the 2005 JVS, health practitioners had the seventh highest vacancy rate in Maine.

Figure 49

The majority of healthcare job vacancies were for full time and/or permanent positions. Nearly half of the available practitioner positions were offering health and dental benefits; the percentage of vacant health support positions offering such benefits was 20 percent.

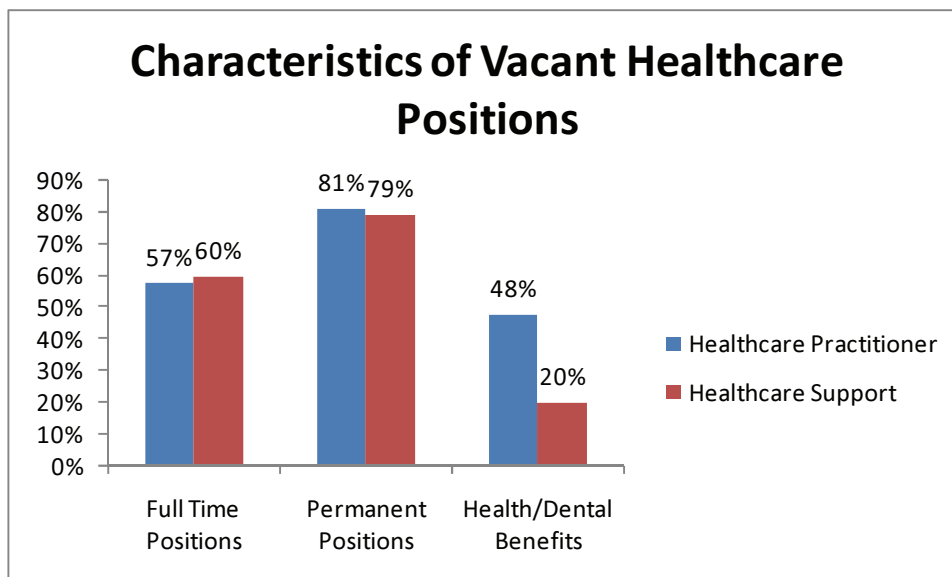


Figure 50

The education, experience and licensure requirements were substantially higher for the healthcare practitioner vacancies than for support workers (figures 51, 52, 53, 54). In terms of education, 83 percent of the practitioner positions required a degree beyond a high school diploma. The proportion of healthcare support vacancies with the same education requirements was 49 percent (figures 51 and 52).



### Minimum Education Required: Healthcare Practitioner

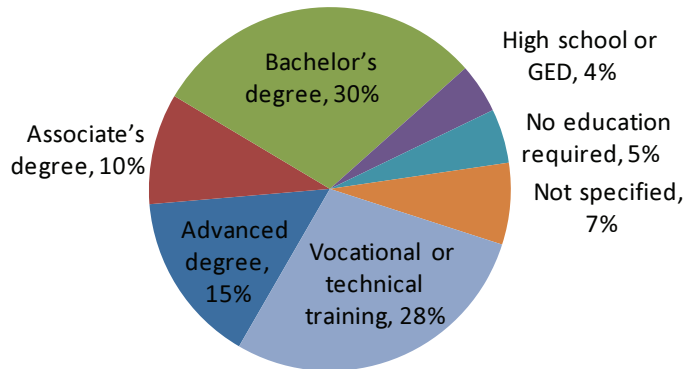


Figure 51

### Minimum Education Required: Healthcare Support

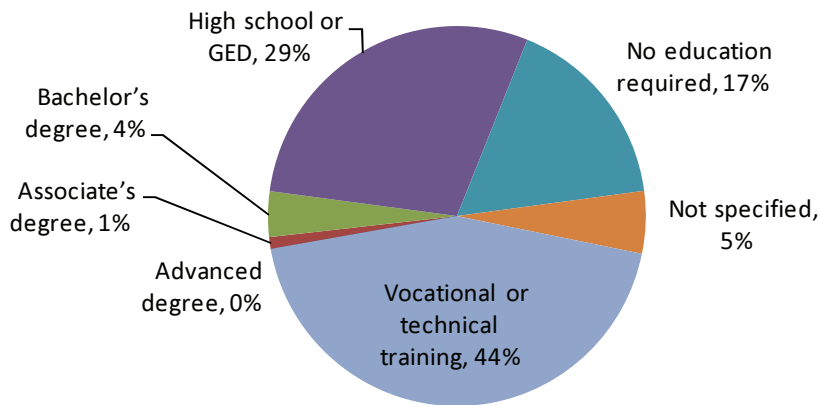


Figure 52

Seventy-two percent of the practitioner vacancies required at least some work experience related to the position. The corresponding figure for the support worker vacancies was 38 percent (figures 53 and 54).

### Minimum Experience Required: Healthcare Practitioner

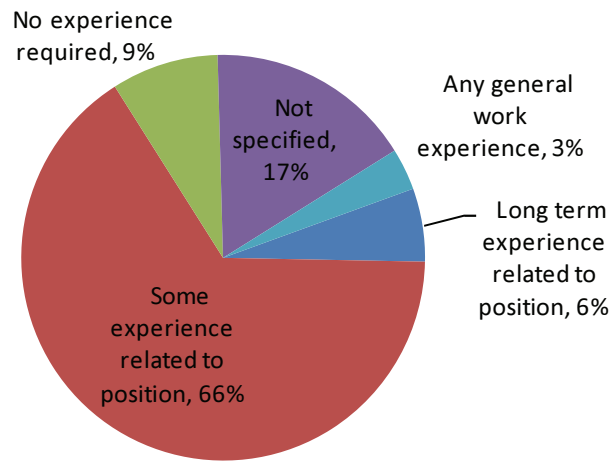


Figure 53

### Minimum Experience Required: Healthcare Support

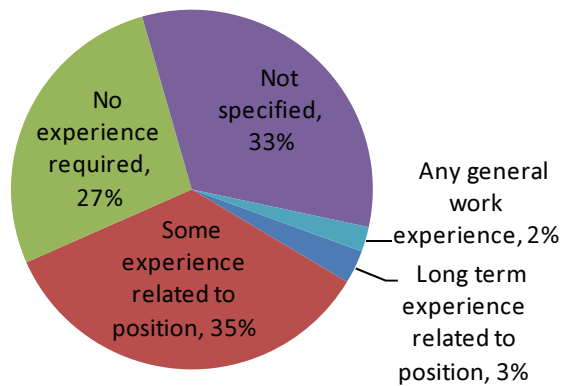


Figure 54

The proportion of healthcare practitioner vacancies requiring a license was 92 percent; the same figure for the healthcare support job vacancies is 69 percent. In both cases this is significantly higher than the licensure requirements for the total statewide vacancies in all-occupations (31 percent).

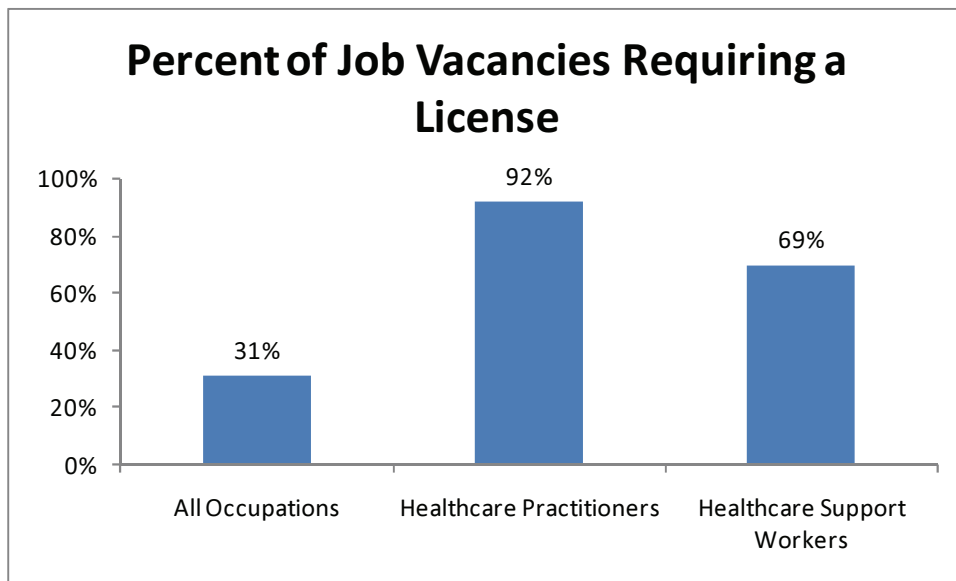


Figure 55

Most of the vacant healthcare jobs are located outside the three major metropolitan areas. Nearly 30 percent of the healthcare job vacancies are in the Portland-South Portland-Biddeford area.

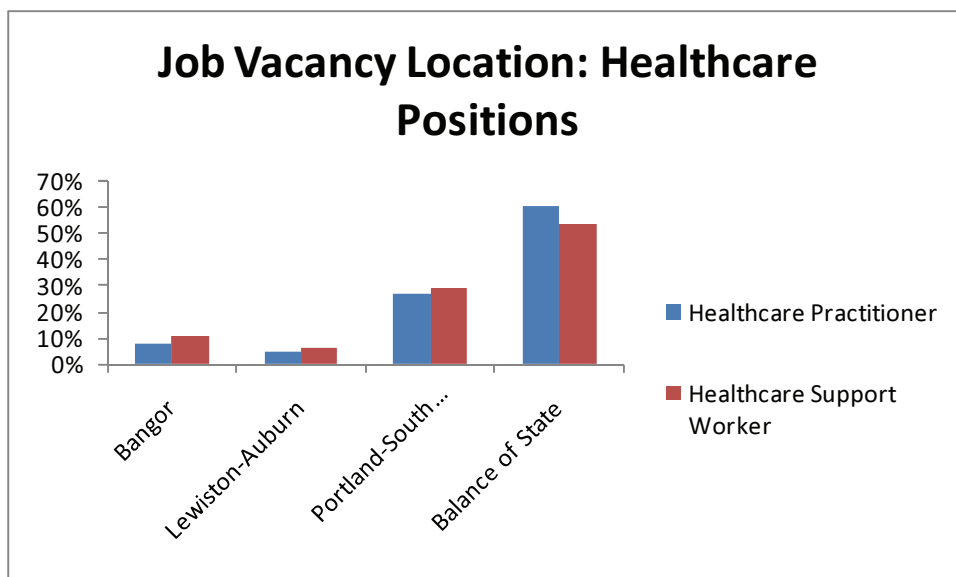


Figure 56

Compared to total statewide vacant positions, the healthcare practitioner job vacancies offer significantly better benefits and require substantially greater education and experience. Figure 57 compares healthcare practitioner, support worker and all-occupations job vacancy characteristics.

2009 Maine Job Vacancy Survey			
<i>Job Characteristics</i>			
	All Occupations	Healthcare Practitioners	Healthcare Support Workers
Total Estimated Vacant Positions	10,914	1,382	643
Full Time Positions	58%	57%	60%
Permanent Positions	86%	81%	79%
Health/Dental Benefits	28%	48%	20%
Minimum Education Required:			
Advanced degree	3%	15%	0%
Associate's degree	3%	10%	1%
Bachelor's degree	10%	30%	4%
High school or GED	21%	4%	29%
No education required	41%	5%	17%
Not specified	12%	7%	5%
Vocational or technical training	10%	28%	44%
License Required	31%	92%	69%
Minimum Experience Required:			
Long term experience related to position	6%	6%	3%
Some experience related to position	35%	66%	35%
No experience required	36%	9%	27%
Not specified	13%	17%	33%
Any general work experience	9%	3%	2%
Workforce Region:			
Bangor	8%	8%	11%
Lewiston-Auburn	10%	4%	6%
Portland-South Portland-Biddeford	33%	27%	29%
Balance of State	49%	61%	53%

Compared to total statewide vacant positions, healthcare practitioner job vacancies offer significantly better benefits and require substantially greater education and experience.

Figure 57

3. The number vacant healthcare positions and vacancy rates by occupation may be seen in figure 58.

Registered nurses (RNs), nursing aides, medical assistants and physical therapists were the four occupations with the highest number of vacant positions. As RNs, nursing aides and medical assistants are three of the four largest healthcare occupations in Maine it is not surprising that these occupations would also have the highest numbers of vacant positions. The number of vacant positions for physical therapists, however, is disproportionately large relative to the number of employed physical therapists in Maine.

Of the high-priority occupations, psychiatrists and physical therapists had the highest vacancy rates; pharmacists and home health aides had the lowest vacancy rates. The vacancy rate for dentists and pediatricians was inconclusive.

Among the non high-priority occupations, cardiovascular technologists and technicians had the highest vacancy rate.

<b>StateWide Vacancies by SOC Code</b> 2009 Maine Job Vacancy Survey				
<u>SOC Title</u>	<u>SOC Code</u>	<u>StateWide Vacancies</u>	<u>OES Empl</u>	<u>Vacancy Rate*</u>
Registered Nurses	291111	636	14,050	4.5%
Nursing Aides, Orderlies, & Attend	311012	314	9,710	3.2%
Medical Assistants	319092	158	2,120	7.5%
Physical Therapists	291123	113	970	11.6%
Pharmacy Technicians	292052	78	1,570	5.0%
AO Physicians & Surgeons	291069	56	1,260	4.4%
Cardiovascular Technlgists & Tech	292031	55	170	32.1%
Dental Hygienists	292021	43	1,120	3.8%
Dental Assistants	319091	37	1,040	3.6%
Occupational Therapists	291122	35	630	5.5%
Licensed Pract & Licensed Voc Nurse	292061	34	1,710	2.0%
Physician Assistants	291071	34	730	4.6%
Psychiatrists	291066	29	130	22.2%
Medical and Clinic LabTechnologist	292011	26	930	2.8%
Home Health Aides	311011	24	5,350	0.4%
Physical Therapist Assistants	312021	21	190	11.3%
Medical & Clinical Lab Technicians	292012	21	710	2.9%
Speech-Language Pathologists	291127	19	710	2.7%
Family and General Practitioners	291062	18	740	2.4%
Medical Records & Health Info Tech	292071	15	770	2.0%
AO Healthcare Support Workers	319099	14	490	2.9%
Dietitians and Nutritionists	291031	13	250	5.2%
Surgical Technologists	292055	13	470	2.7%
AO Therapists	291129	12	NA	NA
Radiologic Technologists & Tech	292034	12	1,260	0.9%
AO Health Technologist & Technician	292099	12	160	7.3%
Pharmacists	291051	11	1,220	0.9%
Athletic Trainers	299091	11	100	10.6%
Respiratory Therapists	291126	10	540	1.9%

\*Calculated using 2008 employment estimates (primary exclusion is the self employed).

Cont'd next page

<b>StateWide Vacancies by SOC Code</b> 2009 Maine Job Vacancy Survey				
<u>SOC Title</u>	<u>SOC Code</u>	<u>StateWide Vacancies</u>	<u>OES Empl</u>	<u>Vacancy Rate*</u>
Emergency Med Tech & Paramedic	292041	10	1,260	0.8%
Internists, General	291063	10	380	2.6%
Obstetricians and Gynecologists	291064	9	140	6.2%
Recreational Therapists	291125	8	100	8.0%
Veterinarians	291131	7	310	2.4%
Diagnostic Medical Sonographers	292032	7	160	4.6%
Surgeons	291067	5	390	1.4%
Anesthesiologists	291061	5	270	1.7%
Audiologists	291121	4	NA	NA
Dietetic Technicians	292051	4	170	2.4%
AO Healthcare Practition & Tec Wkr	299099	3	200	1.6%
Radiation Therapists	291124	3	100	3.1%
Medical Transcriptionists	319094	3	800	0.4%
Nuclear Medicine Technologists	292033	3	80	3.2%
Occupational Therapist Assistants	312011	1	140	0.7%
Massage Therapists	319011	1	180	0.6%
Pharmacy Aides	319095	1	230	0.4%

Figure 58

- The majority of healthcare occupations had vacancy rates above that of the state average (1.8 percent).
- The average vacancy rate for all healthcare positions was 3.5 percent.
- 13 percent of the vacant positions for registered nurses were for nurse practitioners.

One caveat of the JVS is that it is designed to measure the hiring needs at *existing* businesses. Areas or regions of the state that are already underserved by healthcare employers may not be adequately represented as a result (there are no practitioner offices to survey). Other limitations of the JVS are sampling and non-sampling error.

### *Occupational Wage analysis*

Labor supply and demand are primary determinants of interstate occupational wage differentials for comparably experienced and trained individuals.<sup>31</sup> Consider that if comparably trained and experienced dentists earn substantially more in one market for performing the same functions as dentists in other markets, this is a good indication that excess demand for dentists exists in the higher wage area.

In 2008 several high-priority healthcare occupations in Maine—dentists, psychiatrists, surgeons and pharmacists in particular—exhibited mean wage levels suggestive of a shortage of workers. Surgeons in Maine, for example, were compensated more than in any other state in the country in 2008. Compensation for pharmacists in Maine ranked second in the USA;<sup>32</sup> dentists in this state were the fifth highest paid in the country.<sup>33</sup> Average compensation for dentists and surgeons in Maine last year exceeded the national average by more than a full standard deviation.<sup>34</sup>

Occupational Wage Statistics				
Occupation	Mean Hourly Wage, 2008			Maine Wage Rank Vs. Other States
	Maine	USA	% Difference	
Dentists, General	\$86.9	\$74.2	<b>17%</b>	<b>5</b>
Psychiatrists	\$82.1	\$74.1	<b>11%</b>	<b>18</b>
Surgeons	\$108.8	\$99.4	<b>9%</b>	<b>1*</b>
Pharmacists	\$54.1	\$50.1	<b>8%</b>	<b>2</b>

Figure 59 \*1<sup>st</sup> of 38 states reporting.

Several other occupations had average wage levels indicative of an excess supply of labor. These occupations had wages levels that were 10 to 20 percent below the national averages and in most instances in the bottom quintile of all reporting states. The average mean wage for occupational therapists in Maine, for example, was 20 percent below the US average for this occupation and lower than any other state with the exception of the unincorporated territory of Puerto Rico. Average mean wages for occupational therapists in Maine were nearly two standard deviations below the US mean wage for this occupation.

Occupational Wage Statistics				
Occupation	Mean Hourly Wage, 2008			Maine Wage Rank Vs. Other States
	Maine	USA	% Difference	
Registered Nurses	\$28.6	\$31.3	-9%	<b>29</b>
Dental Hygienists	\$29.0	\$32.2	-10%	<b>38</b>
Physical Therapists	\$31.2	\$35.8	-13%	<b>44</b>
Internists, General	\$73.1	\$85.0	-14%	<b>45</b>
Anesthesiologists	\$79.1	\$95.0	-17%	<b>34</b>
Radiation Therapists	\$30.1	\$36.3	-17%	<b>38</b>
Speech-Language Pathologists	\$25.9	\$31.8	-19%	<b>43</b>
Occupational Therapists	\$26.2	\$32.7	-20%	<b>49</b>

Figure 60

In considering the above wage statistics one must note that differing proportions of experienced and inexperienced professionals within a state's occupational labor pool are not accounted for.

Differing levels of experience and training will contribute to wage differentials between states. The lack of teaching hospitals for physicians in Maine, for example, influences the average experience level for all physicians in this state. In the above analysis average experience levels among states are assumed constant.

### *Geographic Distribution of Maine's Healthcare Workforce*

A surplus of workers at the state level does not imply that these workers will be distributed in proportion to the population. Maine's large geographic size and rural nature, the decline of the economic base in many rural areas and the rising costs of healthcare services represent significant hurdles to achieving and maintaining an adequate distribution of the healthcare workforce. As such, it is important to consider occupational shortages not just at the state level but also regionally.

This analysis will:

- 1) Review the distribution and growth of healthcare sector employment by region.
- 2) Review the per capita distribution of healthcare occupations by county and region.

#### 1. Distribution and growth of healthcare sector employment by region.

- Healthcare sector employment in Maine is geographically concentrated: over 50 percent of the jobs are located in the Bangor, Lewiston-Auburn and Portland-South Portland-Biddeford metropolitan areas. Over 75 percent of Maine's healthcare sector jobs are located in and between the Portland to Bangor metropolitan areas (henceforth referred to as the metro and Midcoast area; all other areas of Maine will be referred to as 'rural areas'). See figure 61.



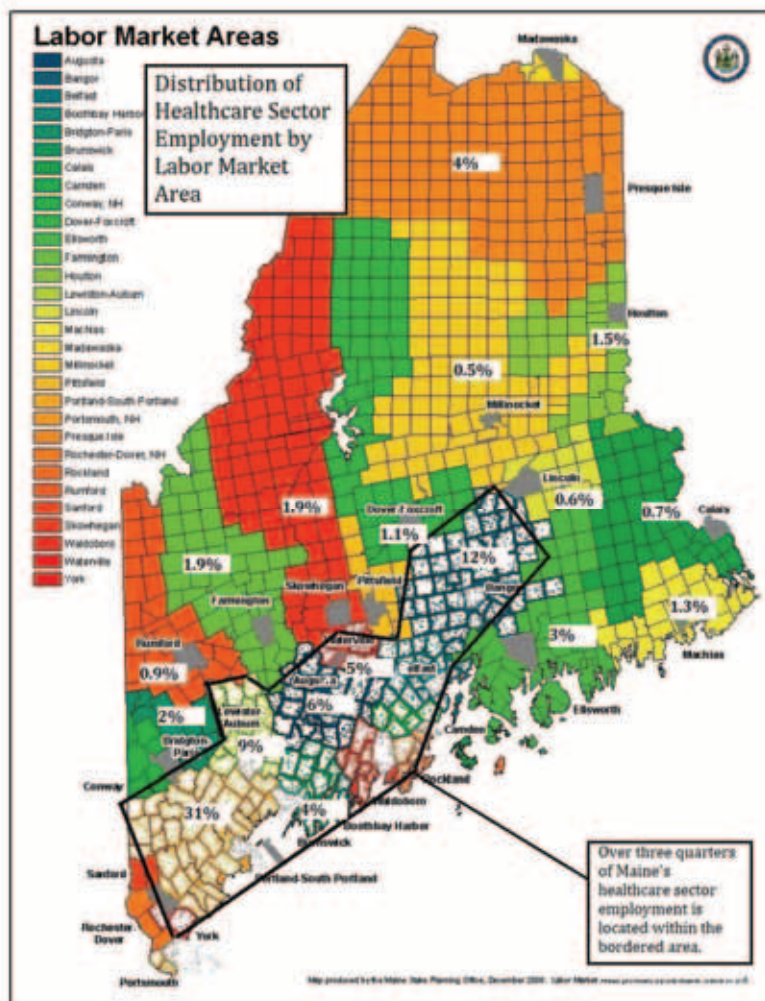


Figure 61

- Maine's healthcare sector employment is growing fastest where it is most densely concentrated—in the metro and Midcoast area. Healthcare jobs are thus gradually becoming more centralized in Maine.

Healthcare Sector Employment Growth by Region			
	2000-2008	2005-2008	2006-2008
Three metro areas + midcoast	22%	5%	3%
All other areas of Maine	15%	1%	0%

Figure 62

Faster job growth in the more densely populated areas of the state is not limited to the healthcare sector. Jobs, in general, have become more centralized in Maine over the last decade. Consider that from 2000 to 2008 there was a 15,360 increase in the number of wage and salary jobs in the three metropolitan areas; jobs in all other areas of the state declined by 3,968 over the same time frame. Most of the job losses in Maine over the last decade can be attributed to the manufacturing sector, with many of these losses occurring in rural areas. Most of the statewide job increases came in the service sector, with the majority of these jobs being healthcare related and in metropolitan areas.<sup>35</sup>

- Healthcare sector employment growth in the metro and Midcoast area has been relatively well balanced across the four healthcare industries.

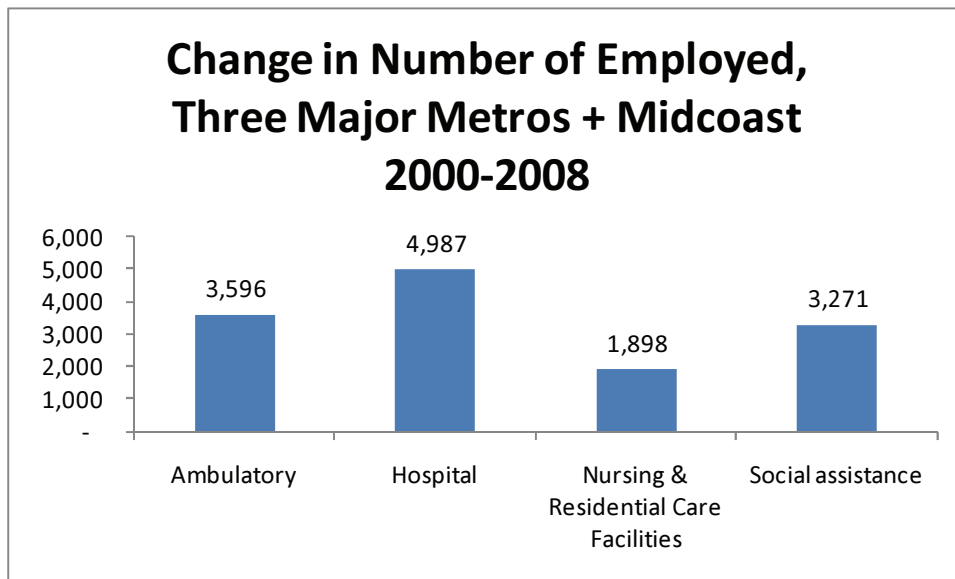


Figure 63

- Healthcare employment growth in the rural areas has been less evenly distributed, as seen in figure 64.

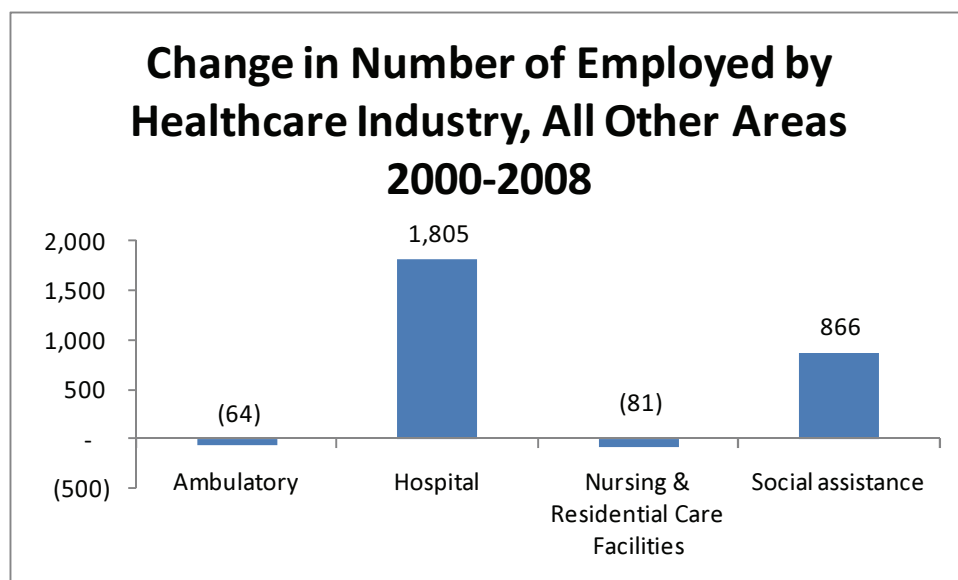


Figure 64

- Disproportionate gains in rural area hospital employment are the result of economic and NAICS issues. Rising costs for inpatient hospital services and the declining job base have resulted in reduced demand for inpatient care. In order to remain financially viable, hospitals have diversified into non-traditional hospital services such as ambulatory care, nursing home, social assistance and drug store services. Northern Maine Medical Center in Fort Kent, for example, is presently using two of its three floors as a nursing home, and The Aroostook Medical Center is increasingly offering ambulatory care and outpatient services. NAICS has not kept pace with the shifting platform of medical care delivery in rural areas—as ambulatory clinics and nursing homes have been subsumed by hospital organizations, this has been classified as traditional hospital employment growth.
- The above example is illustrative of the current challenges faced in delivering rural area medical care. Areas that were once the home of thriving manufacturing operations have seen businesses close, job opportunities collapse and young people depart. Faced with lower revenues and diminished sources of funding, medical centers have been forced to downsize, merge or diversify in order to remain financially viable. At the same time, healthcare employment opportunities in the metropolitan and Midcoast area have been more numerous, diverse and growing more rapidly. These factors are causing healthcare employment to become more centralized as opposed to more distributed.

In addition to these issues, rural area medical centers also face the ongoing challenge of not being as well equipped at handling specialized medical cases as the larger hospitals. Smaller, rural hospitals often lack the expensive and most sophisticated medical equipment as well as specialized occupations. The relative inability to treat specialized cases results in an exodus of patients to hospitals in more urban areas.

## 2. Per capita distribution of healthcare occupations by county and region.

Per capita analysis indicates that many of Maine's less densely populated counties have significantly fewer healthcare professionals than the rest of the state and the US average.

The accompanying Maine county map (figure 65) displays the distribution of employment and wages for Maine's largest healthcare occupation, RNs.

Outside the Midcoast region the concentration of RNs drops, and in some areas drops significantly. Oxford County, for instance, has less than half the RN density per capita as the state (.45 LQ ratio). Note that while Sagadahoc County has an extremely low LQ for RNs, this is offset by the fact that residents here have relatively easy access to medical care in Cumberland, Androscoggin and Kennebec Counties. A similar argument can be made for residents of Waldo and some parts of York County.

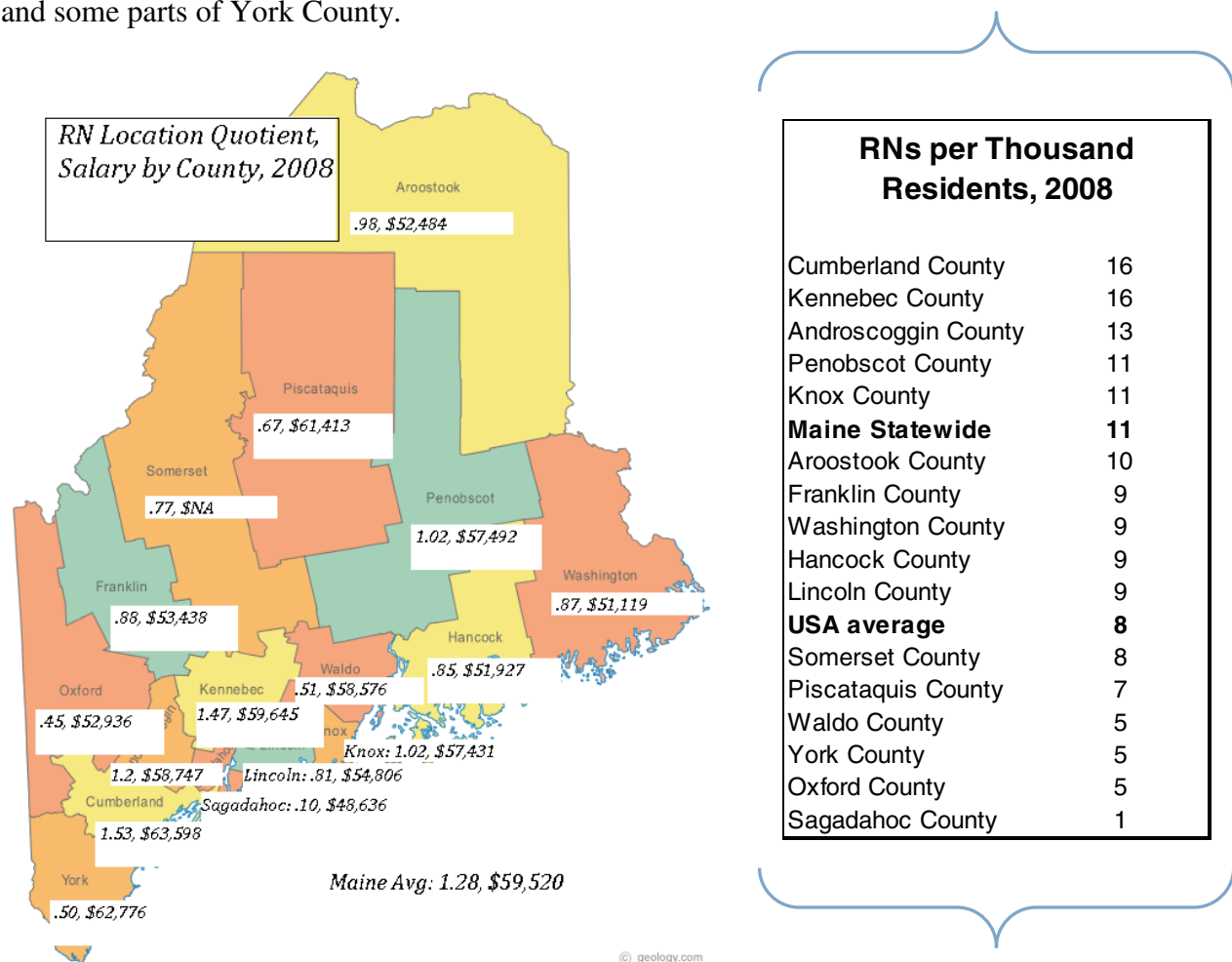


Figure 65

- Cumberland County has the most RNs per capita (LQ: 1.53) as well as the highest average wage for RNs, although wages here are still below the US average.
- Aroostook County, the second most rural county in Maine, has nearly the same number of RNs per capita as the state average. RNs working in Aroostook County last year earned 12 percent less than the state average.
- In 2008 RNs in Piscataquis County were among the highest paid in the state. Despite this, the concentration of RNs was substantially below the state average (0.67 LQ ratio).
- Compared to the nation, Oxford County has 43 percent fewer RNs per capita, and Piscataquis County has 16 percent fewer.

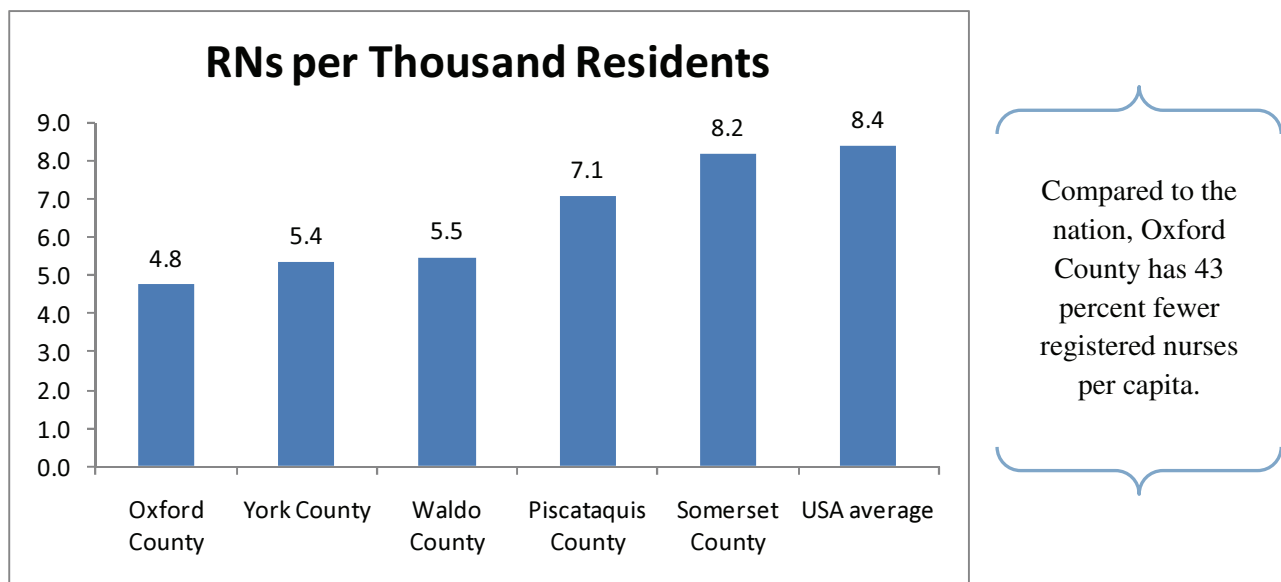


Figure 66

Beyond RNs, county level employment and wage data for individual occupations becomes less available. BLS has strict confidentiality requirements that often results in the suppression of occupational data, particularly in smaller geographic areas. The map below shows county level employment and wage information that is available for nursing aides, the second largest healthcare occupation in Maine.

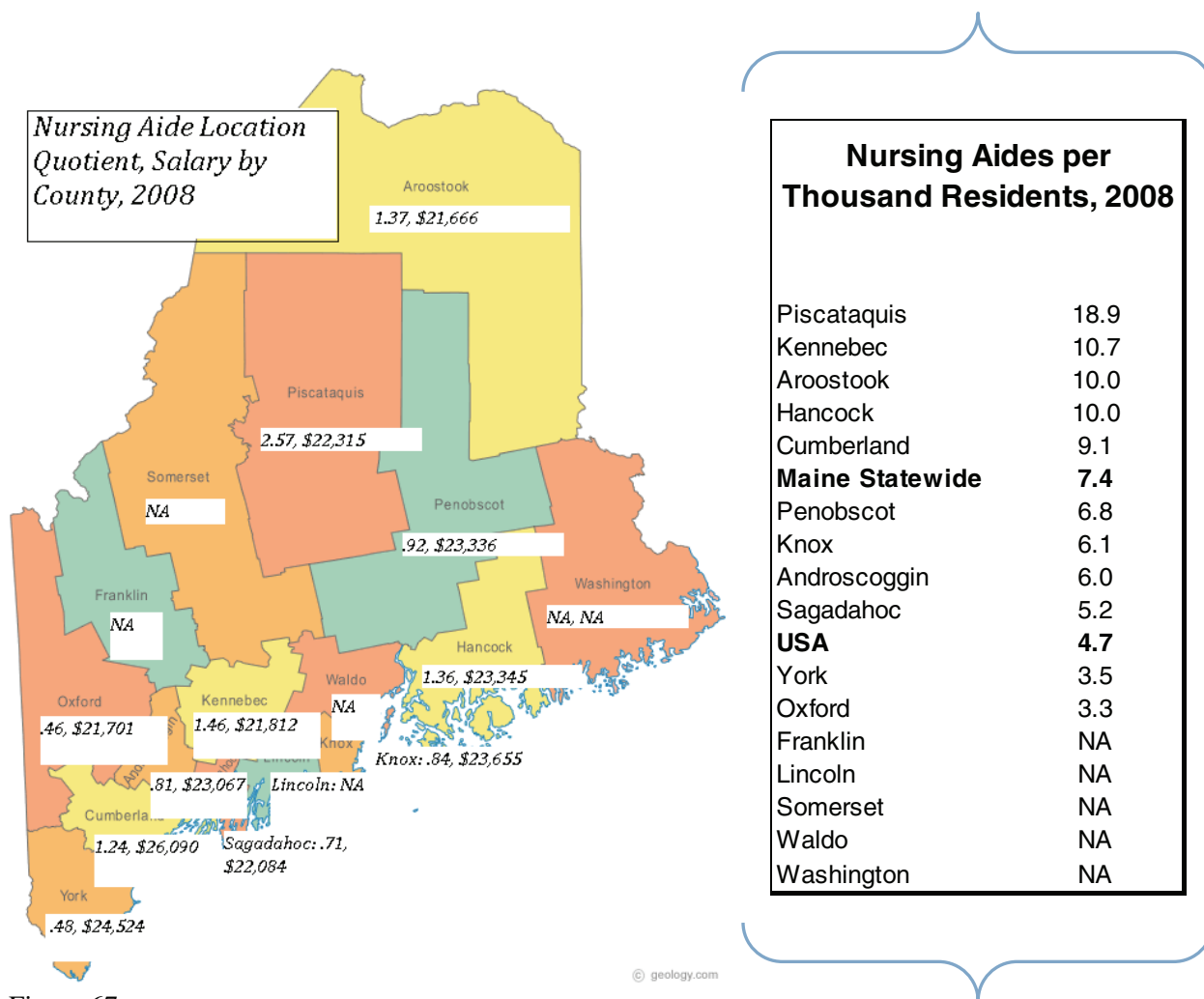


Figure 67

- The mix of nurses in Piscataquis County is heavily skewed toward the lower levels of licensure. Piscataquis County has a much higher proportion of nursing aides (LQ: 2.57) and a much lower proportion of RNs per capita (LQ: 0.67, figure 63) than the state average. This undersupply of RNs may explain the higher-than-average RN wage data in this county last year.
- Compared to the nation, Oxford County has 29 percent fewer nursing aides per capita.

In order to assess the regional distribution of employment in other occupations and satisfy BLS confidentiality requirements, employment data from a number of counties must be aggregated to form a larger universe. Combining Maine's six most rural counties—the counties shaded blue in figure 68—creates a data set large enough to circumvent most BLS data suppression issues. Workforce analysis of these counties reveals that a significant under supply of healthcare professionals exists in Maine's least densely populated areas.

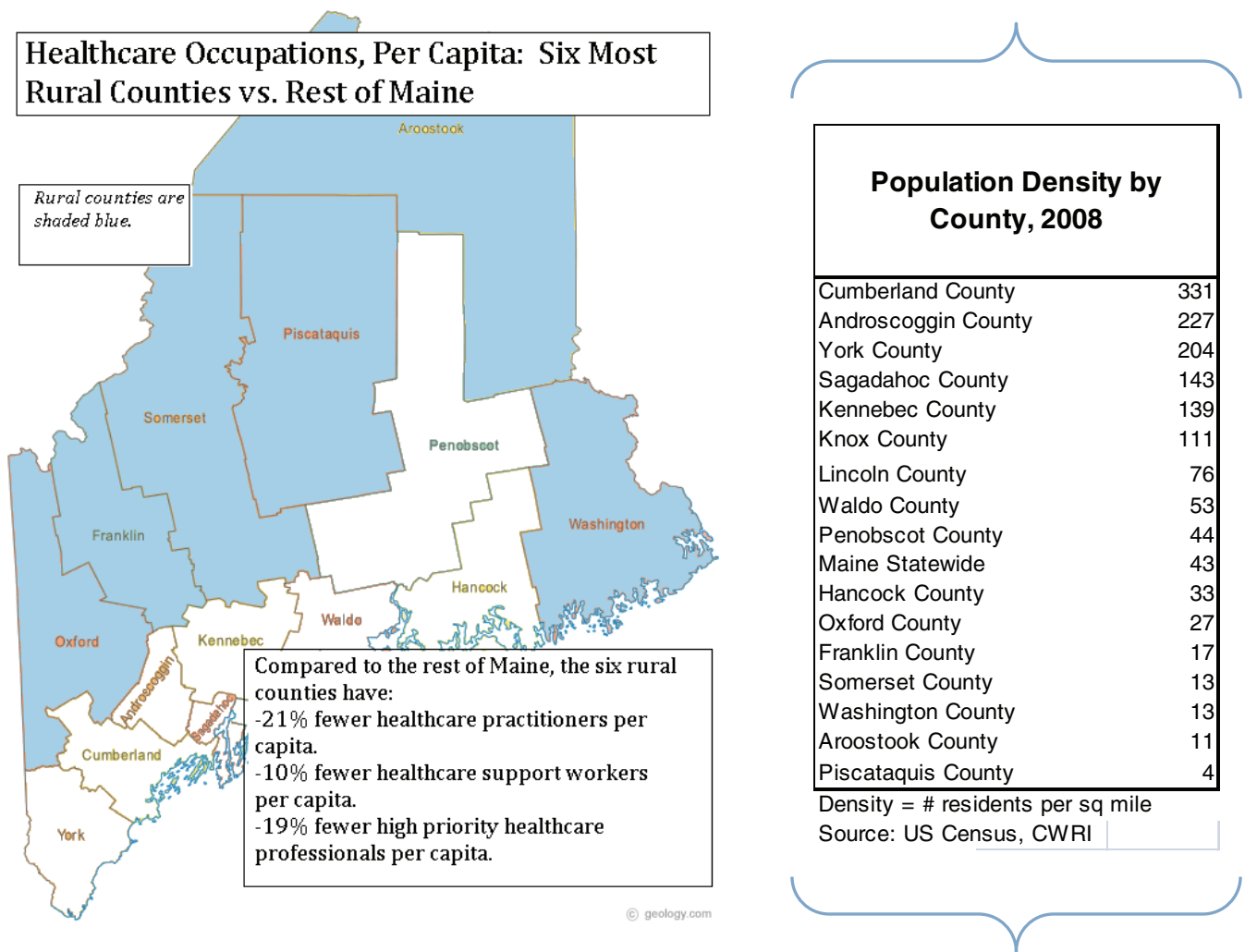


Figure 68

- In the state's six most rural counties there are:
  - 21 percent fewer healthcare practitioners per capita compared to the rest of the state.
  - 10 percent fewer healthcare support workers compared to the rest of the state (per capita).
  - 19 percent fewer high-priority healthcare professionals than in the rest of the state (per capita).
  - Approximately 50 percent fewer physicians and surgeons (all other), dentists, cardiovascular technologists and technicians, surgical technologists, dental hygienists, speech-language pathologists, medical and clinical laboratory technologists and anesthesiologists than in the rest of the state (per capita).
- Compared to the nation, the rural areas have substantially fewer healthcare workers per capita in a number of occupations. These occupations are: physicians and surgeons, all

other, dentists, surgical technologists and technicians, dental hygienists, speech-language pathologists and pediatricians.

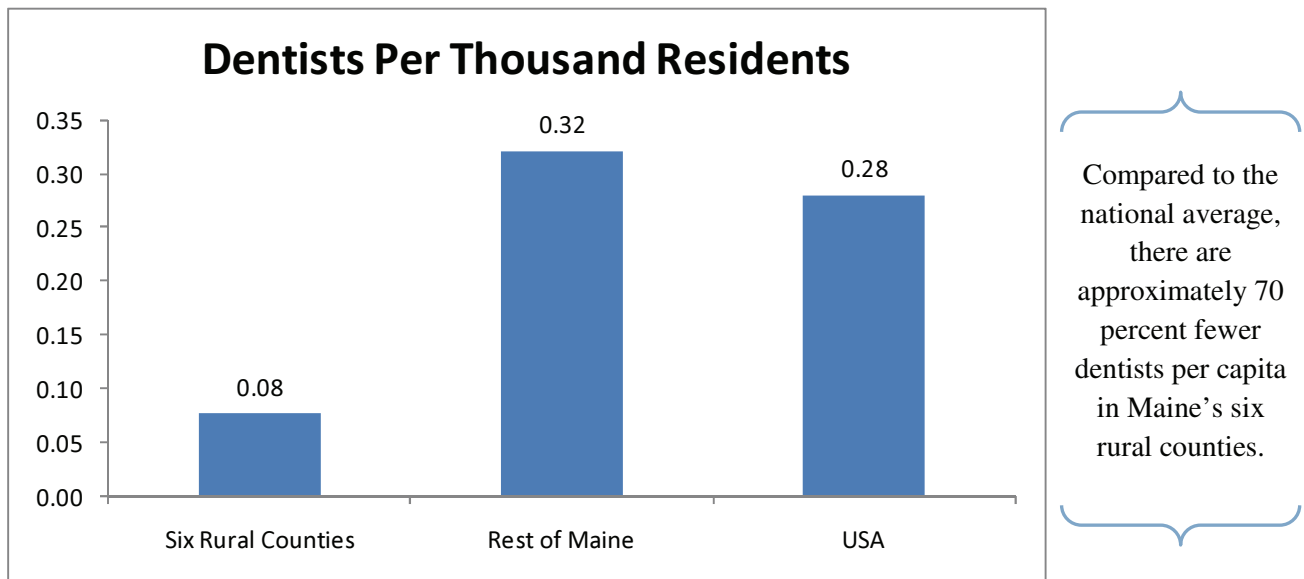


Figure 69

There are more than 70 percent fewer dentists per capita in Maine's rural areas than the national average.

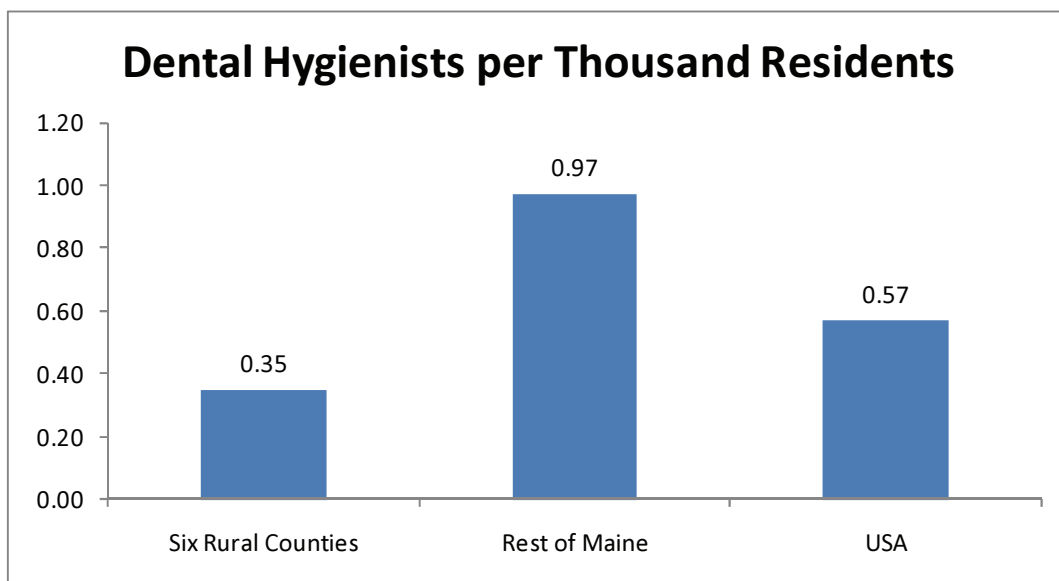
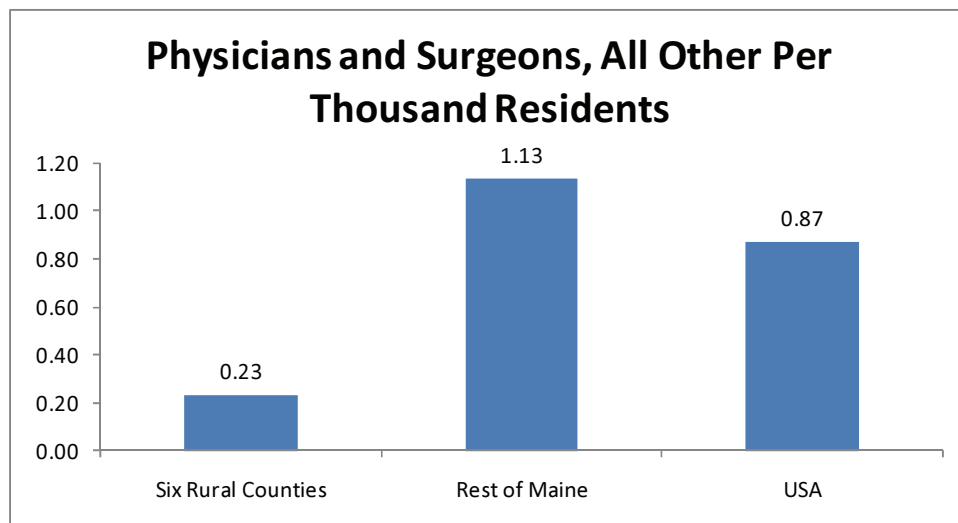


Figure 70

Although there is a sizeable shortage of dental hygienists in rural areas, it is less severe than it is for dentists. There are nearly 40 percent fewer hygienists per capita in the six rural counties versus the nation.



In Maine's rural counties there are nearly 75 percent fewer physicians and surgeons, all other per capita compared to the US. On a per capita basis, dentists and physicians and surgeons, all other are the most undersupplied occupations in the six rural counties compared to the nation.



Physicians and surgeons, all other and dentists are the most undersupplied occupations in Maine's six most rural counties on a per capita basis.

Figure 71

The per capita number of surgical technologists in the rural areas is 60 percent below the national average.

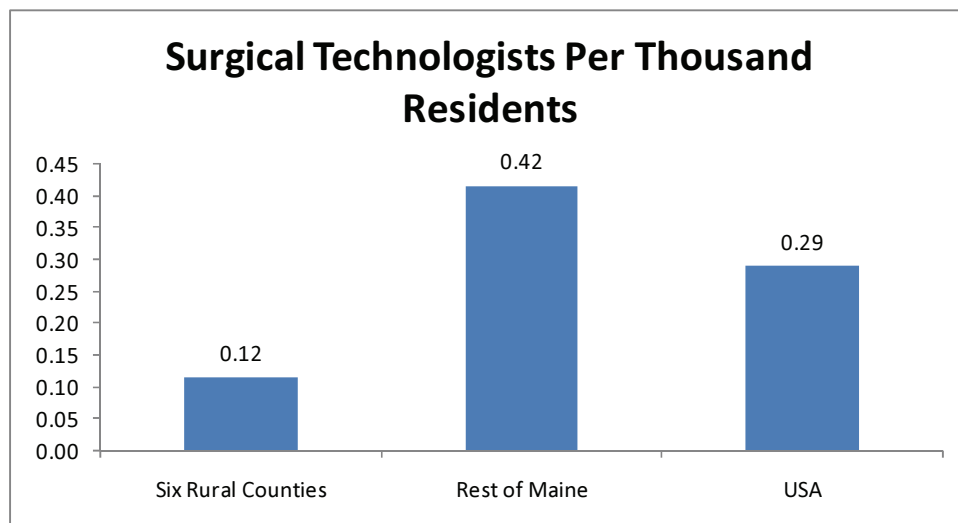


Figure 72

Compared to the nation, there are approximately 30 percent fewer speech-language pathologists in the rural counties. Compared to the rest of the state there are over 60 percent fewer.

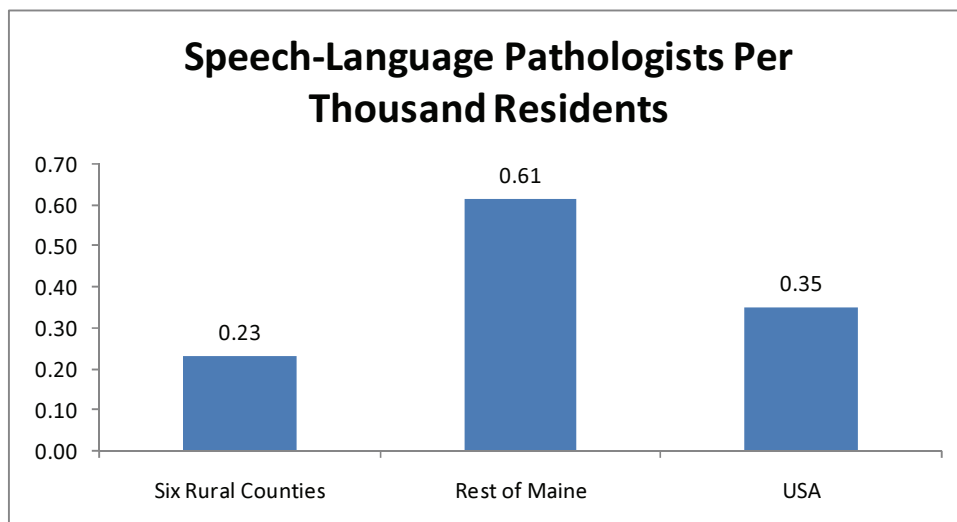


Figure 73

The six rural counties have 23 percent fewer pediatricians per capita than the nation.

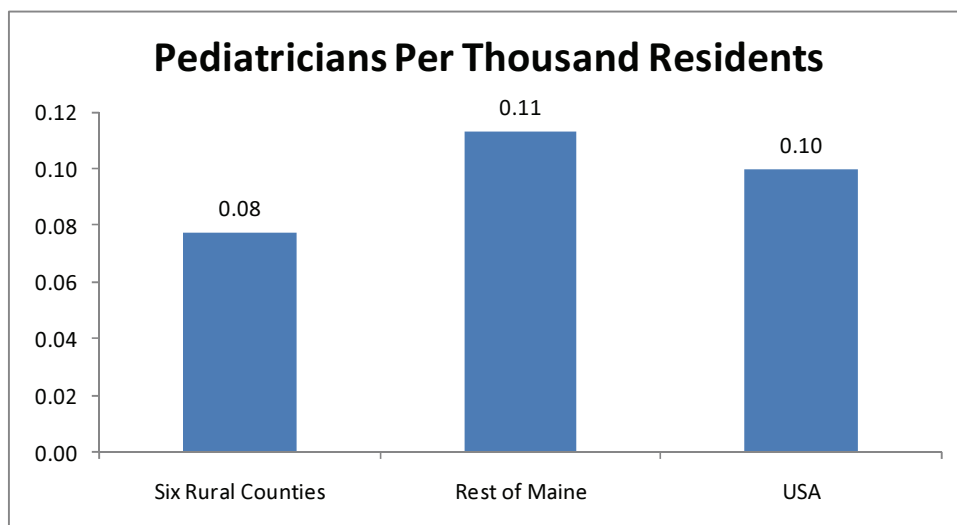
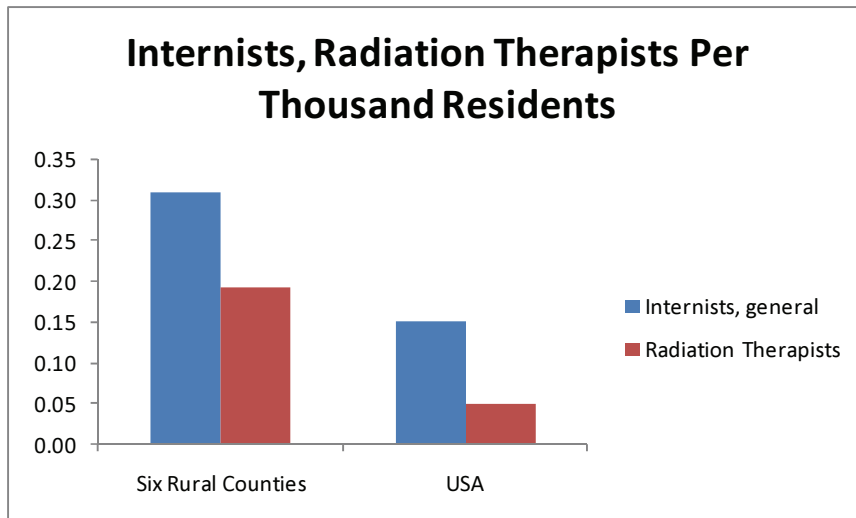


Figure 74

More than half the high-priority occupations in the rural areas have more workers per population compared to the nation. The two occupations with the greatest surplus of workers are internists and radiation therapists (figure 75). Considering all high-priority occupations in aggregate, the rural counties have 14 percent more practitioners per capita than the USA. Statistics for all high priority occupations are found in figure 76.



Compared to the US, physicians and surgeons, all other, dentists, surgical tech, dental hygienists, speech pathologists and pediatricians are the most under supplied occupations in the six rural counties, as measured by per capita analysis. Compared to the rest of Maine, nearly half of the high-priority occupations have at least 25 percent fewer practitioners in Maine's sixmost rural counties.

Figure 75

Practitioners per Thousand Residents					
<i>High Priority Occupations</i>					
	Six Rural Counties	Rest of Maine	USA	LQ Ratio	
				Six Rural Counties vs. Rest of State	Six Rural Counties vs. USA
Physicians and Surgeons, All Other	0.23	1.13	0.87	0.21	0.27
Dentists, General	0.08	0.32	0.28	0.24	0.28
Surgical Technologists	0.12	0.42	0.29	0.28	0.40
Dental Hygienists	0.35	0.97	0.57	0.36	0.61
Speech-Language Pathologists	0.23	0.61	0.35	0.38	0.66
Pediatricians, General	0.08	0.11	0.10	0.68	0.77
Respiratory Therapists	0.31	0.43	0.34	0.71	0.91
Registered Nurses	8.21	11.27	8.40	0.73	0.98
Anesthesiologists	0.12	0.23	0.11	0.51	1.06
Psychiatrists	0.08	0.10	0.07	0.75	1.11
Home Health Aides	3.68	4.16	2.94	0.89	1.25
Physical Therapists	0.70	0.75	0.55	0.93	1.27
Surgeons	0.19	0.32	0.15	0.60	1.29
Pharmacy Technicians	1.43	1.13	1.07	1.26	1.34
Nursing Aides, Orderlies, and Attendants	7.13	7.44	4.67	0.96	1.53
Family and General Practitioners	0.54	0.57	0.35	0.96	1.55
Respiratory Therapy Technicians	0.08	0.04	0.05	2.05	1.55
Pharmacists	0.89	0.94	0.57	0.95	1.56
Obstetricians and Gynecologists	0.12	0.10	0.07	1.12	1.66
Occupational Therapists	0.58	0.45	0.31	1.28	1.87
Physician Assistants	0.46	0.58	0.24	0.81	1.94
Internists, General	0.31	0.28	0.15	1.09	2.07
Radiation Therapists	0.19	0.05	0.05	4.10	3.87
<b>High Priority Occupations</b>	<b>26</b>	<b>32</b>	<b>23</b>	<b>0.81</b>	<b>1.14</b>

Figure 76 See Appendix VIII for data on most healthcare occupations.

CWRI recognizes that the area comprising Maine's six rural counties is large and the per capita distribution of healthcare workers within this area will vary. This analysis is intended to serve as a starting point from which further and more detailed geographic analysis can be conducted in the future.

*To what extent does lower compensation play a role in the subpar representation of healthcare workers in Maine's rural areas?* While healthcare occupations in the six rural counties pay approximately 10 percent less than the average statewide wage for those occupations, it is difficult to quantify the impact this has on employment levels. The reason is this: half of the occupations that had the largest negative wage differentials in the six rural counties had an oversupply of workers compared to the state average.<sup>36</sup> In some occupations the relationship between wages and employment appears more straightforward—dentists working in the six rural counties, for example, are massively undersupplied and underpaid when compared to the state average. It is difficult to make any broader assertions with this data, however. See Appendix IX for healthcare occupational wage statistics in the six rural counties.

A mitigating factor in the above distribution analysis is that not all residents in rural counties will have equally poor access to healthcare services. Residents in the southern portions of Oxford, Franklin, Somerset and Piscataquis Counties, for example, have better access to healthcare services in the Portland, Lewiston-Auburn and Bangor metropolitan areas than do people living in the more remote areas of these counties.

### *Occupational Program Completer Analysis*

Another component of workforce analysis assesses how existing shortages and surpluses may change over time. A prerequisite for this analysis is having reliable data that quantifies the extent to which newly trained healthcare workers are being produced at educational institutions in Maine. The current process for collecting such information is challenging, however. The two primary sources for educational program completer data—the Occupational Supply Demand System (OSDS) and the American Medical Association (AMA)—have limitations that make collecting accurate and timely data difficult. In order to develop more accurate program completer estimates CWRI compared OSDS and AMA data and corresponded with a number of schools, the AMA and the National Occupational Supply Demand Consortium in order to resolve inconsistencies in the data.

What follows is a brief discussion of:

- 1) The strengths and weaknesses of current program completer data sources.
- 2) Program completer trends at Maine schools.
- 3) A recommendation for how the data collection process could be improved in the future.

1. Strengths and weaknesses of current program completer data sources.
  - a. The OSDS supplies information on program completers by occupation, state and school program. The OSDS uses the National Center for Education Statistics (NCES) and the Integrated Postsecondary Education Data System (IPEDS) as its

source for program completer data. The Higher Education Act of 1965, as amended, requires every school that participates in the federal student loan program submit data on the number of student enrollments, program completers, graduation rates, etc. to the NCES. IPEDS is the repository for these statistics, and is “the primary source for data on colleges, universities, and technical and vocational postsecondary institutions in the United States.”<sup>37</sup> The OSDS, which was developed by the National Supply Demand Consortium with funding from the U.S. Department of Labor, categorizes NCES/IPEDS data by state, occupation and Classification of Instruction Program (CIP).<sup>38</sup>

The primary strength of OSDS data is the very high, if not perfect response rate from schools. If an educational program participates in the federal student loan program, they are required by law to submit statistics to NCES.

The primary limitations of OSDS/IPEDS data arise from the fact that:

- **Schools have discretion in choosing which CIP<sup>39</sup> best characterizes their programs of training. This can result in the misclassification of educational programs, which results in the miscounting of program completers.** In some cases schools accidentally misclassify their educational programs (one radiography program in Maine was classified under the CIP for radiation therapy instead of radiography); in other cases there is genuine ambiguity as to which CIP best characterizes the educational program. The ambiguity in the way programs are reported to NCES/IPEDS makes counting the number of program completers in specific occupations challenging. Two examples illustrate the issue:
  - The University of Maine’s Medical Laboratory Technology (MLT) program is a joint program that is available at the University of Maine Presque Isle (UMPI) and Augusta (UMA) campuses, yet each campus reports the program to NCES under a different CIP code: UMA reports the MLT program under “Clinical/Medical Lab Assistant” while UMPI reports it as “Clinical/Medical Laboratory Technician”. See Medical and Clinical Laboratory Technicians in Appendix VI for more details on differences in reporting.
  - The Central Maine Medical Center (CMMC) College of Nursing classifies their Associate’s Degree program for registered nurse (RN) training under the CIP, “Nursing, other” while other schools offering the same degree classify their RN training under the CIP, “Registered Nurse Training.”

- **Some educational programs do not participate in the federal student loan program; program completers at these schools are not captured by OSDS/IPEDS.** The Maine Medical Center (MMC) School of Surgical Technology, for example, does not participate in the federal student loan program, and as such is not required by law to submit program completer statistics to NCES. Yet the MMC School of Surgical Technology produces nearly three times the number of graduates per year than all other surgical tech programs in Maine, combined. Thus, if one is not aware of the MMC program and used OSDS to find out how many surgical technology program completers there are in Maine, a significant miscounting would result.

Other important factors to consider with OSDS data:

- The data is fairly old (currently 2007/2008 academic year).
  - In the case of dual majors, only the primary major is used.
  - The academic year is defined from July 1<sup>st</sup> through June 30<sup>th</sup>.
  - The OSDS does not capture short-term training programs requiring less than 300 class hours. Occupations requiring on-the-job (OJT) and vocational training will not be captured very well by OSDS.<sup>40</sup>
- b. A second data source for occupational program completers is available in the Health Professions Education Data Book, published annually by the AMA. The AMA conducts an annual survey of health education programs that have accreditation with certain organizations.<sup>41</sup> One of the limitations of the AMA survey is a lower response rate than with OSDS data (2007 AMA survey response rate was 55.2 percent). A second limitation is that the AMA uses survey responses from prior years to boost the current year's response rate. The 2007 survey response rate was increased to 78.3 percent by including response data from the 2005 and 2006 surveys.<sup>42</sup> These issues make interpreting AMA survey data challenging. AMA program completer data for occupational therapist assistants is a good example:

The AMA reports 11 occupational therapist assistant program completers in 2004, 2005 and 2006, and zero completers are reported for 2007. Were the 11 program completers in 2004 through 2006 a result of older survey data being used to compensate for non responders, or were there actually the same number of graduates each year? Were there no program completers in 2007 as the AMA survey indicates, or was a survey not turned in? The most likely explanation is that a survey was not completed, as OSDS reports 15 completers in 2006/2007.

Other factors to consider with the AMA survey:

- School programs that are not accredited are not counted in the survey. As a result, AMA data potentially undercounts the number of program completers. The AMA survey shows zero program completers in cardiovascular technology in Maine, for example, but Southern Maine Community College has had five to ten graduates per year in this area.<sup>43</sup>
- The AMA defines the academic year as running from September 1<sup>st</sup> through August 31<sup>st</sup>.

The above examples illustrate how relying on OSDS and/or AMA data information could lead to ambiguous conclusions on health education program completers, particularly if one does not have specific knowledge of these systems/surveys and of Maine's health educational programs.

Tracking Health Education Program Completers	
Occupational Supply Demand System	Health Professions Education Data Book
<p>All schools participating in federal student loan programs are required by law to submit education statistics to IPEDS.</p> <p>Survey responses are required by law.</p> <p>Ambiguity in how schools define their programs (CIP) creates ambiguity in tracking program completers.</p> <p>Some educational programs don't participate in federal student loan program.</p> <p>Only counts the primary major for dual majors.</p> <p>Does not capture OJT or vocational training programs effectively.</p> <p>Academic year: July 1-June30.</p>	<p>The AMA conducts an annual Survey of Health Professions Education Programs*</p> <p>Lower survey response rate vs. OSDS; 2007 response rate was 55%.</p> <p>Lack of survey responses makes tracking graduates by occupation and program difficult.</p> <p>Data from older surveys is used in lieu of non-responding programs in the current survey year. The 2007 survey response rate was boosted to 78% by using 2005 and 2006 survey data.</p> <p>Does not capture non-accredited programs.</p> <p>Academic year: September 1-August 31.</p>

\*In 2007, 5,903 programs were surveyed out of 8,128 programs in the USA.

Figure 77

## 2. Program completer trends at Maine schools.

By comparing and analyzing OSDS and AMA statistics and conversing with educational institutions, the AMA and the National Occupational Supply Demand Consortium, CWRI developed provisional program completer figures for most healthcare occupations. These results are found in figure 78. More detailed program completer statistics—program completers by occupation (including a comparison between OSDS and AMA completer statistics), degree, school and gender—are available in Appendix VI.



Program Completer Trends at Maine Schools				
Occupation	2006	2007	2008	Comment
RNs	751	848	790	Includes completers of Masters Degree programs
Dental Hygienists	79	83	88	
Radiologic Technologists and Technicians	72	72	70	
Occupational Therapists	43	27	50	AMA numbers differ; see appendix VI
Speech-Language Pathologists	28	45	46	
Physical Therapists	32	24	45	
Physicians Assistants	47	38	45	
Respiratory Therapists and Technicians	23	27	22	
Med/Clinical Lab Technicians*	17	15	17	CMCC's program was terminated in 2008.
Occupational Therapist Assistants	12	15	16	
Dental Assistants (UMA dental assisting school)	9	10	12	Does not include OJT completers
Dietetic Technicians	9	9	12	AMA survey shows 0 completers. Voc. training.
Surgical Technologists**	11	4	12	Does not include MMC School Surgical Tech
Radiation Therapists	5	0	10	SMCC the only JRCERT accredited program in ME.
Recreational Therapists	9	16	10	
Cardiovascular Tech	11	9	7	AMA survey shows 0 completers.
Medical/Clinical Lab Technologists***	5	6	6	
Physical Therapist Assistants	5	5	4	
Anesthesiologists	0	0	0	
Chiropractors	0	0	0	
Dentists	0	0	0	
Diagnostic Medical Sonographers	0	0	0	KVCC's certificate program not picked up by OSDS
Family and General Practitioners	0	0	0	
Internists, General	0	0	0	
Nursing Aides****	24	0	0	Voc. training. CMMC canceled their CNA program.
Obstetricians and Gynecologists	0	0	0	
Optometrists	0	0	0	
Pediatricians, General	0	0	0	
Pharmacists	0	0	0	New schools coming online
Physicians & Surgeons, All Other	0	0	0	
Podiatrists	0	0	0	
Psychiatrists	0	0	0	
Surgeons	0	0	0	
Nuclear Medicine Technologists*****	5	5		These are AMA figures

\*Production of MLTs will be reduced by roughly one third as CMCC terminated their program in '08. Different completer estimates exist for MLTs. See appendix VI.  
\*\*Figures don't include MMC School of Surgical Tech (doesn't participate in federal student loan program), which has had roughly 30 graduates per year.  
\*\*\*University of Maine/EMMC is the only CLS program in the state. According to EMMC, there have been six graduates from this program every year since 2005.  
\*\*\*\*MMC has a CNA program that is free if accepted; this program is not captured by OSDS.  
\*\*\*\*\*Central Maine Medical Center School of Nuclear Medicine is not captured in OSDS data as the program doesn't participate in the federal student loan program.  
Occupations requiring OJT or vocational training are not measured well by OSDS. Most occupations requiring OJT are excluded from this chart.  
OSDS only counts the primary major for dual majors. Academic year: July 1-June 30.  
Source: NCES, OSDS, AMA, CWRI

Figure 78

- There are no program completers in many occupations. This statistic will change when the pharmaceutical schools at Husson University and University of New England and the new MMC-Tufts School of Medicine Medical School Program begin to be captured in the OSDS statistics. The MMC-Tufts medical school program will have first graduates in 2013 (program has capacity for 36 students, 20 of which are reserved for Maine residents). Also, program completers from UNE's College of Osteopathy are not captured in the above chart.
- OSDS and AMA statistics for occupational therapists differ significantly. See Occupational Therapists in Appendix VI for more detail.

Contrasting the average number of program completers with expected annual job opening projections reveals that the production of healthcare professionals is insufficient in over half of the occupations tested (figure 79).

Employment Projections vs. Program Completers						
Occupation	Employment		Avg. Annual Job Openings, 2006-2016	Program Completers, 3 yr avg. (2005-2008)	Completers less Openings	S-D Ratio
	2006	2016				
Pharmacists	1,169	1,431	46	0	-46	265
Physicians & Surgeons, All Other	1,435	1,600	43	0	-43	245
Medical/Clinical Lab Technologists	887	1,110	35	6	-29	64
Family and General Practitioners	781	838	20	0	-20	154
Med/Clinical Lab Technicians*	756	896	25	11	-14	76
Internists, General	499	527	12	0	-12	161
Surgeons	516	543	12	0	-12	200
Dentists	505	506	10	0	-10	91
Podiatrists	135	142	6	0	-6	
Psychiatrists	209	227	6	0	-6	291
Anesthesiologists	179	201	5	0	-5	217
Physical Therapist Assistants	196	260	9	5	-4	
Optometrists	120	143	4	0	-4	
Pediatricians, General	169	181	4	0	-4	150
Obstetricians and Gynecologists	119	133	3	0	-3	99
Physical Therapists	985	1,215	35	34	-1	136
Radiation Therapists	107	135	5	5	0	47
Cardiovascular Tech	207	260	8	9	1	
Medical Records Tech	768	894	34	35	1	
Dietetic Technicians	174	196	7	10	3	
Nuclear Medicine Technologists**	72	84	2	5	3	
Respiratory Therapists & Technicians	570	686	20	24	4	139
Recreational Therapists	105	104	2	12	10	
Surgical Technologists***	443	561	26	36	10	43
Occupational Therapists	680	766	19	40	21	88
Physicians Assistants	594	728	21	43	22	95
Speech-Language Pathologists	700	721	16	40	24	92
Radiologic Tech	1,106	1,327	37	71	34	88
Dental Hygienists	977	1,175	39	83	44	65
RNs	14,048	17,045	532	796	264	107

Occupations requiring OJT or vocational training are excluded as OSDS and AMA do not measure completers accurately.

\*Adjusts for CMCC's terminated program.

\*\*Uses AMA survey data which shows 5 completers each year for 2005 through 2007.

\*\*\*Uses AMA 2005-2007 survey data as OSDS doesn't include MMC School of Surgical Technology

Source: OSDS, AMA, CWRI

Figure 79

The new pharmacy and medical school programs will help address the shortages of pharmacist and physician program completers relative to average annual job openings, as displayed in figure 79.<sup>44</sup> The number of program completers for medical lab technologists and medical lab

technicians, however, are below expected average annual job openings, and CWRI is not aware of program expansions in these areas.

The above chart helps is a starting point for understanding how occupational shortages or surpluses may change over time. The reader should note that the job projections used assume the healthcare system of the future will resemble the past. Also, the model above has no variable to capture the number of program completers leaving the state for other opportunities or those working in other occupations—all program completers are assumed to flow into Maine’s healthcare workforce. This overstates the supply of healthcare workers and may make some occupations appear to have a sufficient number of completers when that is not the case.<sup>45</sup>

### 3. A recommendation for how the data collection process could be improved in the future.

Effective workforce analysis requires good data and a systematic approach to tracking supply and demand for labor. While progress is being made on the demand side with the use of software that tracks real-time job demand, more work needs to be done on the supply side. Maine lacks a comprehensive, up to date database of information regarding health education programs offered and program completers at educational institutions and vocational training centers. Such a tool would increase clarity on the potential supply of workers entering the market in each occupation and be an integral aspect of analysis that seeks to identify where additional programs may be needed.

## *Healthcare Occupational Shortages in Maine: Summary*

A variety of tools have been utilized to ascertain the degree to which individual healthcare occupations in Maine and different regions of the state are over or undersupplied. As each of these methodologies has different strengths and weaknesses it is best to use each tool not in isolation but as a compliment to the others. Moreover, interpreting the results must be done in light of the limitations of each analytical tool. With this in mind, the major findings are summarized below.

- US healthcare practitioner shortage ratios suggest that nationwide, the shortage for primary care physicians and dentists is greater than it is for mental health providers. The same statistics for Maine suggest that the shortage for dentists in this state is more acute than it is for primary care and mental health practitioners. Also, the dentist shortage in Maine is greater than it is for the nation as a whole. The grouping of multiple occupations within primary care and mental health categories creates the possibility that an individual occupation within either of these areas could have a greater shortage than that of its group average.
- Maine’s healthcare workforce is relatively well stocked in most occupations when compared to the nation, according to per capita analysis.

- Physician assistants, surgeons, internists and anesthesiologists are the high-priority occupations with greatest excess of workers when compared to the nation on a per capita basis. These occupations have approximately twice the number of practitioners per population than the US average.
- Only two high-priority occupations—respiratory therapy technicians and dentists—have a lower supply of workers per population compared to the nation. In both cases the shortage is relatively modest. If there is a national shortage of dentists, as US DHHS Practitioner Shortage statistics suggest, the shortage of dentists in Maine would be more severe than indicated with per capita analysis. This is due to the fact that per capita analysis is a relative benchmark (relative to the national average).
- Supply/demand ratios indicate that the hiring demand for workers in many healthcare occupations is greater than the national average. This suggests shortages of workers may exist in these occupations.
  - 15 occupations representing 59 percent of the healthcare workforce had excess hiring demand, according to S/D analysis.
  - 13 of 22 high-priority occupations tested—RNs, pharmacy tech, physicians and surgeons, all other, pharmacists, physical therapists, family and general practitioners, respiratory therapists, surgeons, internists, anesthesiologists, pediatricians, nursing aides and psychiatrists—had greater hiring demand than the national average.
  - The healthcare occupations with the greatest hiring demand compared to the nation were psychiatrists, pharmacists, physicians and surgeons, all other, anesthesiologists and surgeons.
- CWRI vacancy surveys indicate that demand for healthcare workers has been more resilient than other occupations. Although the vacancy rate for healthcare practitioners declined from 5.3 percent in 2005 to 3.8 percent in 2009, the magnitude of this decline was smaller than that of many other occupations. Moreover, healthcare practitioners had the second highest vacancy rate of all occupations in the 2009 JVS and the proportion of statewide vacant positions for this occupation grew substantially from the prior survey. Registered nurses, nursing aides, medical assistants and physical therapists had the largest number of vacant positions statewide. The high priority occupations with the highest vacancy rates were psychiatrists and physical therapists.
- In 2008, several high-priority healthcare occupations in Maine—dentists, psychiatrists, surgeons and pharmacists in particular—exhibited mean wage levels suggestive of a shortage of workers.

- The distribution of healthcare workers is a significant issue in Maine. Oxford County has 43 percent fewer RNs per capita than the nation and 29 percent fewer nursing aides. In Maine's six most rural counties there are significant per capita shortages of physicians and surgeons, all other, dentists, surgical technologists, dental hygienists, speech pathologists and pediatricians compared to the nation. The declining job and economic base in many rural areas will likely worsen the situation.
- Several occupations have insufficient numbers of program completers to meet expected annual job openings. The new pharmacy school programs and the MMC-Tufts School of Medicine will help address these issues (as would the dental school that is being proposed by UNE). On the other hand, medical/clinical lab technologists and medical lab technicians are not producing enough graduates to meet expected demand growth and CWRI is not aware of any program expansions in these areas.

### *Healthcare Occupational Conclusions*

- While per capita analysis—which indicates most high priority occupations have an excess of workers compared to the nation—should not be ignored, other indicators suggest that greater numbers of workers are desired by market participants.
  - The high-priority occupation with results most consistently suggesting a statewide shortage of practitioners is psychiatry. The S/D ratio, vacancy rate and wage differential are all high.<sup>46</sup>
  - Indicators for obstetrics and gynecology also point to a shortage with consistency, but with less intensity than in the case of psychiatry (S/D ratio, vacancy rate and wage differential are comparatively lower).
  - Several other occupations have two out of the three market-based indicators (wage differentials, S/D ratio and vacancy rate) suggesting some tightness in the supply of labor. These occupations include: surgeons, pharmacists, physicians and surgeons, all other, pharmacy technicians, physical therapists, registered nurses. Physician assistants could also be included in this category, but note that the positive wage differential in Maine compared to the nation is not quite as strong as it is with the other occupations (physician and surgeons, all other also has a low wage differential but the S/D ratio is very high). The HWOL job advertisement trends for physician assistants, as seen in the healthcare occupations data sheets (Appendix VI) reveal a relatively strong demand trend for physician assistants in Maine.
  - The distribution of dentists throughout Maine is a significant workforce challenge. The rural areas of the state have substantial per capita shortages of practitioners compared to the rest of Maine and the nation; the major metropolitan and Midcoast area, on the other hand, has four times the dentists per capita as the rural areas and 14 percent more than the nation. On a statewide basis DHHS

Practitioner Shortage statistics, per capita analysis and occupational wage statistics indicate shortages. Supply/Demand ratios, on the other hand, suggest below average hiring demand for dentists. None of the dental offices interviewed in the job vacancy survey were actively seeking dentists.

- Physical therapists, pharmacy technicians and registered nurses appear to have excess demand for workers (as reflected above average S/D ratios and vacancy rates) but the average wages paid in these occupations are below that of other states. The low levels of average wages in these occupations in Maine may be a barrier for the excess demand being fulfilled.
- Family and general practitioners and internists have very similar statistics: High S/D scores, moderate vacancy rates and low wage differentials relative to the nation. Also, these two occupations have the strongest real-time HWOL trends (HWOL job advertisement trends by occupation are available in Appendix V: healthcare occupations data sheets).
- Pediatricians—the modest statewide per capita surplus (LQ: 1.06) is likely overstated, as US DHHS statistics indicate that primary care physicians are in a national shortage situation. In addition, the S/D ratio indicates above average hiring demand for pediatricians in Maine. On the other hand, none of the healthcare offices interviewed for the Maine JVS indicated a need for more pediatricians and wage statistics were not suggestive of shortages.
- A variety of occupations have conflicting demand signals (high S/D ratio OR high vacancy rate) and low or average wages (see figure 80, below).
- Among the non high-priority occupations, cardiovascular technologists and technicians and health technologists and technicians, all other have the most consistent signs of shortages, according to a variety of metrics.
  - Cardiovascular technologists and technicians: On a per capita basis there are approximately 20 percent fewer cardiovascular techs in Maine compared to the nation. The vacancy rate was for this occupation very high: 32 percent. The S/D ratio was 109, indicating tighter than average labor market conditions. Average mean hourly wages for cardiovascular techs in Maine were nearly 10 percent above the US average in 2008. In addition, Maine's six rural counties have approximately 75 percent fewer cardiovascular technologists and technicians compared to the rest of the state as well as the nation.
  - Health technologists and technicians, all other represent all health technologists not listed separately, such as dialysis technicians and hearing aid specialists. On a per capita basis Maine has only half the number of practitioners in this occupation compared to the nation. The vacancy rate was 7.3 percent, and average mean wages were six percent above the US average.

# Workforce Challenges Matrix: High Priority Occupations

	LQ Ratios		Wage Differentials			Unfilled Demand		Completers
	Maine vs. USA	Rural County vs. US Avg	Maine vs. USA	Std. Deviation from US Mean	Rural Counties vs. Maine Avg	S-D Ratio	Vacancy Rate	Sufficiency of Program Completers*
Occupations with the Most Indications of Shortages								
Psychiatrists	1.41	1.11	11%	0.7	1%	291	22.2%	-6
Surgeons	1.97	1.29	9%	1.4	-4%	200	1.4%	-12
Pharmacists	1.05	1.56	8%	0.9	1%	265	0.9%	-46
Physicians and Surgeons, AO	1.10	0.27	-1%	(0.1)	14%	245	4.4%	-43
Dentists	0.98	0.28	17%	1.5	-33%	91		-10
Obstetricians and Gynecologists	1.52	1.66	7%	0.6	5%	99	6.2%	-3
Occupations with Indications of Shortages (High S-D ratio, Vacancy rate) but Low Wages May Inhibit Demand from Being Filled								
Pharmacy Tech	1.11	1.34	-5%	(0.4)	-3%	110	5.0%	
Physical Therapists	1.34	1.27	-13%	(1.1)	-3%	136	11.6%	-1
RNs	1.28	0.98	-9%	(0.6)	-9%	107	4.5%	264
Occupations with Conflicting Demand Signals (High S-D ratio or High Vacancy Rate) and Low or Avg Wages								
Physician Assistants	2.31	1.94	4%	0.3	-2%	95	4.6%	22
Dental Hygienists	1.49	0.61	-10%	(0.6)	1%	65	3.8%	44
Anesthesiologists	1.86	1.06	-5%	(1.5)	10%	217	1.7%	-5
Nursing Aides, Orderlies	1.58	1.53	-5%	(0.4)	-7%	161	3.2%	
Family and General Practitioners	1.61	1.55	-6%	(0.5)	1%	154	2.4%	-20
Internists, General	1.92	2.07	-14%	(0.9)	6%	161	2.6%	-12
Occupational Therapists	1.54	1.87	-20%	(1.9)	-22%	88	5.5%	21
Respiratory Therapists	1.21	0.91	-1%	Not sig	-1%	139	1.9%	4
Pediatricians, General	1.06	0.77	1%	not sig	5%	150		-4
Low Demand, Low Wage								
Radiation Therapists	1.52	3.87	-17%	(1.2)	-15%	47	3.1%	0
Speech-Language Pathologists	1.54	0.66	-19%	(1.4)	-3%	92	2.7%	24
Surgical Technologists	1.23	0.40	-4%	(0.3)	-9%	43	2.7%	10
Misc.								
Home Health Aides	1.38	1.25	4%	0.3	1%	64	0.4%	
Respiratory Therapy Technicians	0.91	1.55	4%	not sig	7%			

\*Number of program completers minus average annual job openings.

## Key:

L-Q ratios above 1.0 indicate proportionally more workers per capita in Maine than the nation.

Large wage differentials compared to the USA are a possible indication of excess supply or demand.

S/D ratios above 100 indicate hiring demand greater than the national average for that occupation.

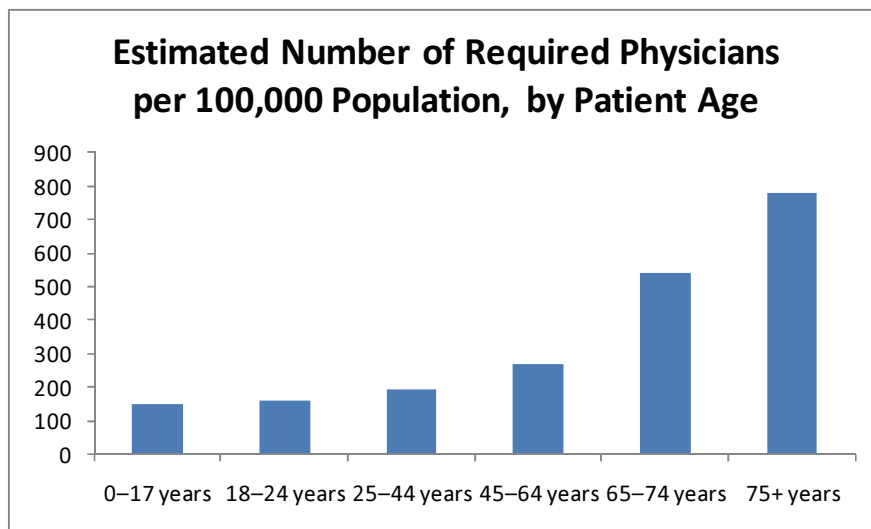
High vacancy rates indicate unfilled demand for workers. For the purposes of this analysis, occupations with a vacancy rate above the healthcare occupations average (3.5%) are considered excessive.

Figure 80



## The Impact of Maine's Aging Population on the Demand for Physicians

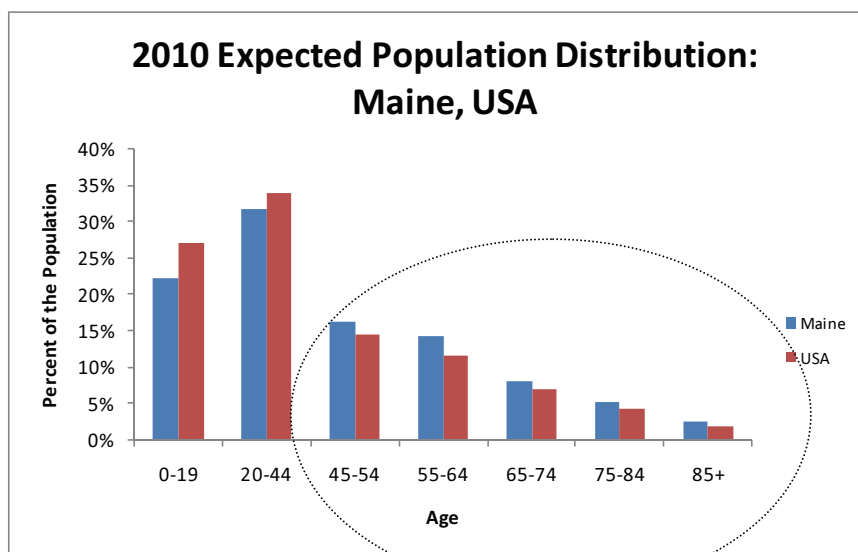
The demographics of a population play a significant role in the quantity and type of healthcare services demanded. This is due to the fact that the consumption of healthcare increases dramatically with age. For example, the number of doctors required per 100,000 population is estimated to rise substantially as a given population ages. Figure 81, below, illustrates that those over the age 75 require approximately five times the number of physicians per population than do infants and children (0-17 years old).<sup>47</sup> As the population ages, healthcare demand will increase, all else being equal.



The number of physicians required per population increases materially with age.

Figure 81 Source: US DHHS Physician Requirement Model

Understanding healthcare consumption patterns by age segment is important for the reason that Maine's population is both older and aging more rapidly than the nation.



In Maine, the percent of the population age 65 and above is expected to be 15.6% in 2010—the third highest in the country. By 2030, the percent of the population age 65 and above in Maine is expected to be 26.5%, second only to Florida.

Figure 82



According to the US Census Bureau, the median age in Maine is expected to be 42.2 years in 2010, 13 percent above the US median age. Compared to the nation, Maine has a higher proportion of its population in every age segment above 45 years and a lower proportion of people less than 45 years. In light of the fact that the number of doctors required per capita increases as one grows older, the age distribution of Maine's population predisposes this state to structurally higher numbers of physicians required relative to the nation, all else equal.

Maine's population is also aging more rapidly than the nation. By 2030, the median age in this state is expected to be 20 percent above the US median age.<sup>48</sup> Figure 82 illustrates that over the next 20 years the working age and child population in this state will decline while the segments of the population above 65 years will increase. Thus, the next two decades in Maine will see an increase in the segments of the population that require substantially higher numbers of physicians per population (those over 65 years) and a decline in those that require fewer physicians per population (those below 65 years).

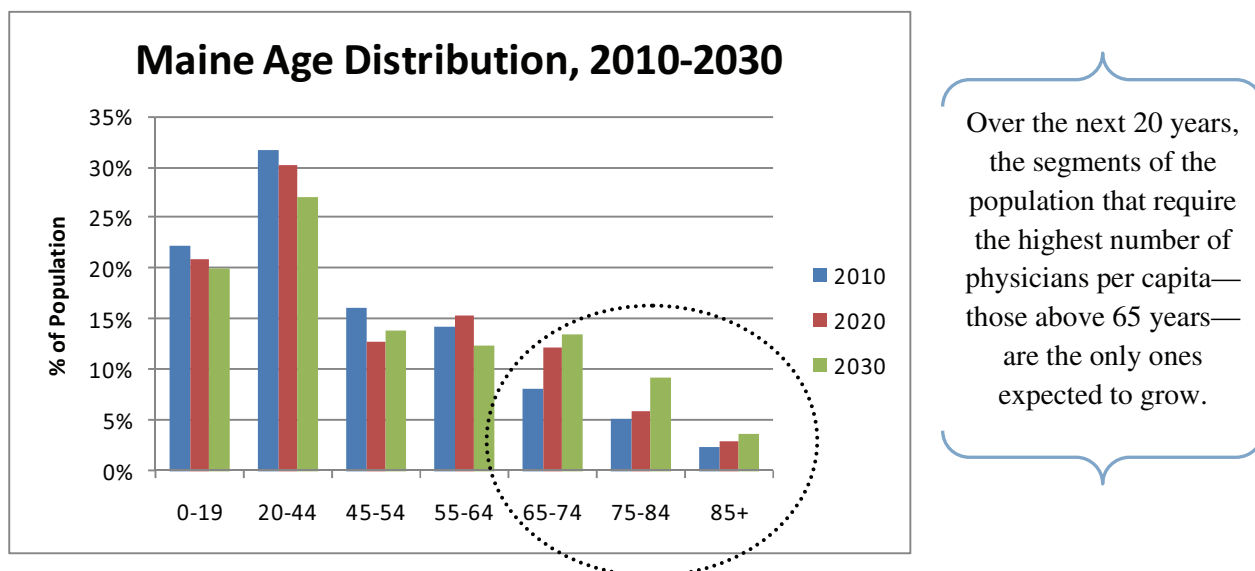
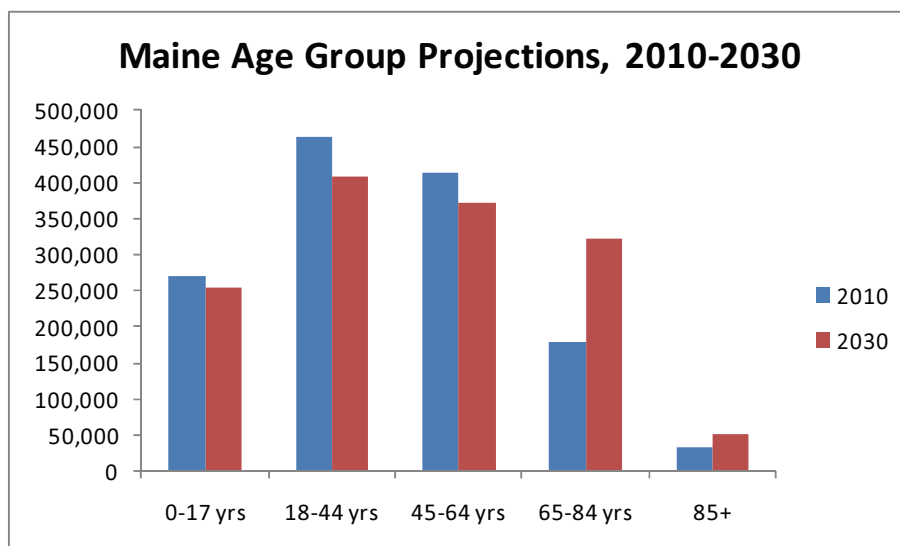


Figure 83

The changing of Maine's population demographics over the next 20 years appears more dramatic when compared to the same figures for the nation. Figures 84 and 85 reveal that while growth in the segment of the population above 65 years is occurring both in Maine and nationally, growth in the younger segments of the population is expected to occur across the US, but not in Maine.



The population in Maine below 65 years is expected to decline nine percent over the next two decades. Nationally, the same population segments are expected to increase nine percent.

Figure 84

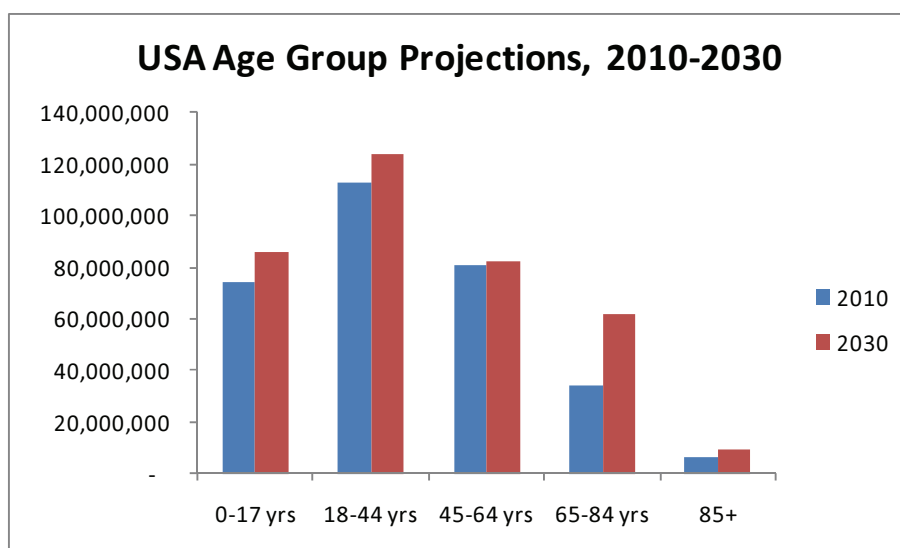


Figure 85

What impact will shifting population demographics have on the demand for physicians in Maine? In order to answer this question CWRI applied 2020 and 2030 Maine population distribution estimates (underlying data from figure 83, source: US Census Bureau) to estimates for the number of physicians required per population by age group and medical specialty. Physician per population requirements are from the US DHHS physician requirement model (PRM) and are displayed below.<sup>49</sup>

Estimated Requirements for Patient Care; Physicians per 100,000 Population, by Patient Age and Physician Specialty, 2000					
Age Group	Specialty				
	<u>Primary Care</u>	<u>Medical Specialties</u>	<u>Surgery</u>	<u>Other</u>	Total
0–17 years	95	10	16	29	149
18–24 years	43	15	54	48	159
25–44 years	59	23	52	62	196
45–64 years	89	41	59	81	270
65–74 years	175	97	125	145	543
75+ years	270	130	161	220	781
Total	95	33	55	70	253

Source: US DHHS

Figure 86

- Primary care includes general and family practice, general internal medicine and pediatrics.
- Medical specialties include cardiology and other internal medicine subspecialties.
- Surgery includes general surgery, OB/GYN, ophthalmology, orthopedic surgery, otolaryngology, urology and other surgical specialties.
- Other includes anesthesiology, emergency medicine, pathology, psychiatry, radiology and other specialties.

Data in figure 86 shows how the number of physicians required per capita increases dramatically with age. In 2000, on average for the US, there were estimated to be approximately 149 required physicians (MDs and DOs) per 100,000 children (0-17 years old) and 781 for the segment of the population over the age of 75 years.

Applying the above baseline physician requirement estimates to US Census age distribution estimates for the state of Maine over the next 20 years yields a good approximation of how shifting demographics in this state will impact the demand for the quantity and type of physicians. **The results of this analysis indicate that population and aging growth in Maine will cause the total demand for physicians to increase 22.5 percent, or by nearly 850 practitioners over the next 20 years. (figure 87).** Demand for specialty physicians (cardiologists and other internal medicine subspecialties) will grow the fastest in percentage terms, according to this analysis.

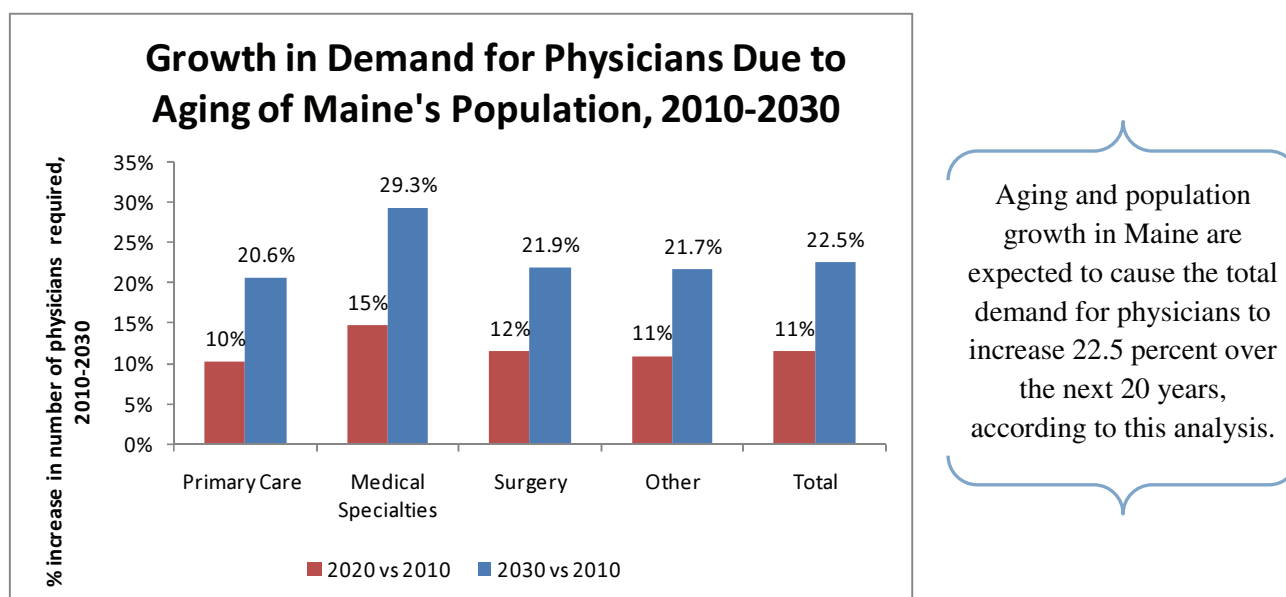


Figure 87

On a per capita basis, the aging of Maine's population is expected to cause demand for physicians to increase 18 percent through 2030 (figure 88). Physicians with medical specialties will experience the greatest growth in demand (24 percent) on a per capita basis due to the aging of the population.

Baseline Physician Requirement Projections per 100,000 Population					
	Primary Care	Medical Specialties	Surgery	Other	Total
2010	100	39	60	78	<b>278</b>
2020	107	43	65	84	<b>299</b>
2030	117	49	71	92	<b>328</b>
Change 2010-2030	16%	24%	17%	17%	<b>18%</b>

Figure 88

The underlying assumption of the PRM is that the US healthcare system of the future will resemble the current one: existing patterns of healthcare delivery are not expected to materially change over the forecast period. Growth in market share of non-physician clinics, above or below trend personal income growth and rapid increases in physician productivity could alter the number of physicians required per population over the next decade. This analysis also assumes that the number of physicians required per population age group in Maine is comparable to the national averages.

In terms of meeting the growing demand for physicians, the University of New England's College of Osteopathy and the Maine Medical Center-Tufts medical school program will be sources of newly trained doctors.<sup>50</sup> With more than one fifth of Maine's physician workforce over the age of 60, however, the rate of practitioner attrition may increase in coming years due to retirements.<sup>51</sup>

## Workforce Demographics

In 2007 the first healthcare occupations report highlighted the demographics of Maine's healthcare workforce as a potential looming crisis: Several high priority occupations were documented as having large numbers of workers approaching the age of retirement. These workers would be exiting the labor force just as healthcare demand growth accelerated due to the aging of the Maine's resident population. Three years later, the same demographic challenges remain. As this topic was covered in depth in the inaugural report, only a few comments will be made here.

The challenge that Maine faces with respect to the demographics of the healthcare workforce is not entirely unique. The demographic characteristics of physicians in Maine, for example, are very similar to that of the US physician population.

- In 2004, 21.3 percent of physicians in Maine were over 60, and 27.7 percent were female.
- In 2004, approximately one third of physicians in the US were above the age 55, and 25 percent were female.

Age Distribution of Active US Physicians, 2004



Source: Health Resources and Services Administration

Figure 89

The Health Resource and Services Administration (HRSA) states that active female physicians in the US are significantly younger than male physicians: In 2005, 61 percent of active female physicians were below the age of 45. The comparable figure for male physicians was 38 percent. Moreover, half of all graduating physicians in the US are female, nearly twice the proportion of active female physicians in the US today. Thus, over time, the composition of the nation's and in

all likelihood Maine's physician workforce will be increasingly comprised of younger, female practitioners.

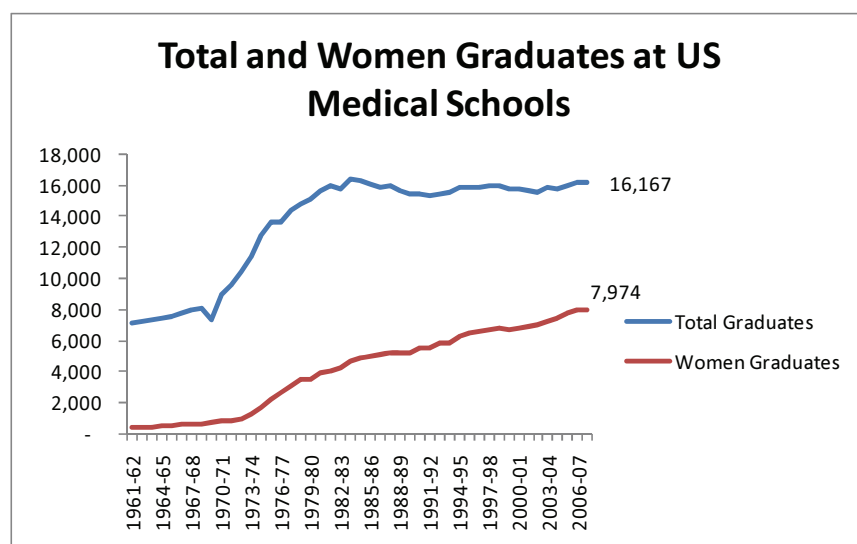
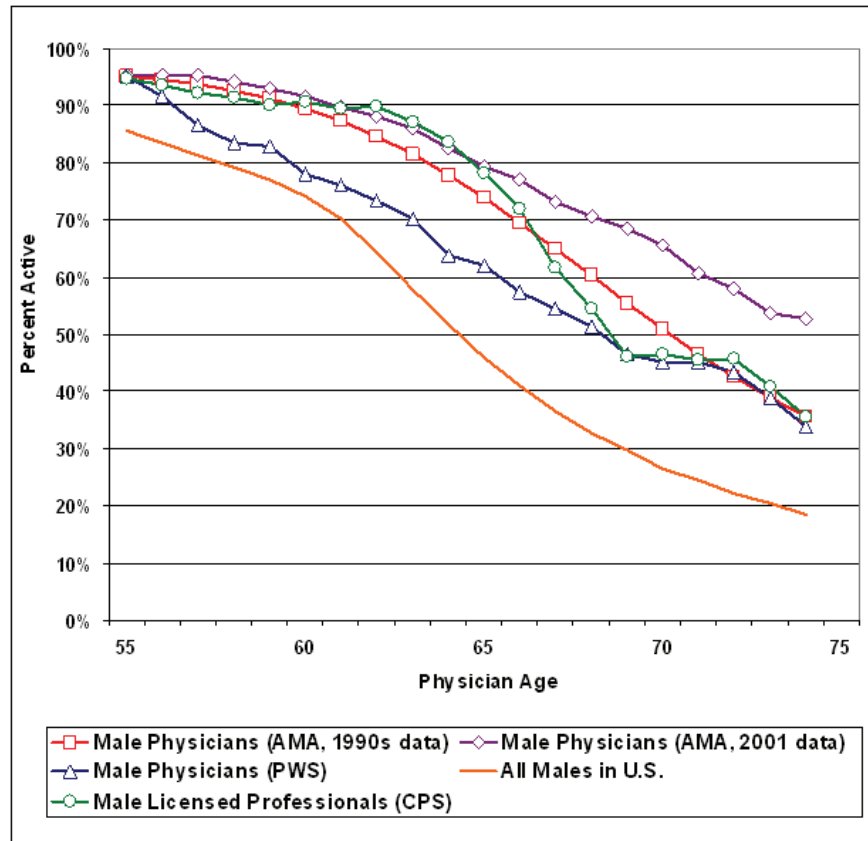


Figure 90 Source: American Medical Association

Another factor with respect to the demographics of the workforce is the retirement patterns of workers. Research indicates that, at least in the case of physicians, the average age of retirement is well beyond the retirement age for all other occupations. The results of a study conducted by HRSA on the retirement patterns of physicians in the US indicate that at the age of 65, 60 to 80 percent of male physicians are still active in the workforce. This compares to approximately 45 percent of the total male population in the US still being active in the workforce at the age 65. An offsetting factor is that historically, the number of hours worked by physicians above 65 years old has been 10 to 15 percent less than younger doctors.

## Percent of Male Physicians Active in the Workforce, by Physician Age



Male physicians tend to retire at a much later age than males in all other occupations.

Source: Health Resources and Services Administration

Figure 91

Although extending the age of retirement can be an effective way to increase the supply of healthcare practitioners, it does not or should not remove the urgency for programs that will educate and train replacement workers with the requisite knowledge, skills and abilities. The aging of Maine's healthcare workforce remains a significant issue and CWRI again underscores the necessity of maintaining and building the supply of healthcare professionals in this state.

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## Appendix I—List of Healthcare Occupations

Healthcare Practitioners and Technical Workers		
SOC Code	Occupation	Education/Training Requirement
29-1011	Chiropractors	First professional degree
29-1021	Dentists, General	First professional degree
29-1031	Dietitians and Nutritionists	Bachelor's degree
29-1041	Optometrists	First professional degree
29-1051	Pharmacists	First professional degree
29-1061	Anesthesiologists	First professional degree
29-1062	Family and General Practitioners	First professional degree
29-1063	Internists, General	First professional degree
29-1064	Obstetricians and Gynecologists	First professional degree
29-1065	Pediatricians, General	First professional degree
29-1066	Psychiatrists	First professional degree
29-1067	Surgeons	First professional degree
29-1069	Physicians and Surgeons, All Other	First professional degree
29-1071	Physician Assistants	Master's degree
29-1081	Podiatrists	First professional degree
29-1111	Registered Nurses	Associate degree
29-1122	Occupational Therapists	Master's degree
29-1123	Physical Therapists	Master's degree
29-1124	Radiation Therapists	Associate degree
29-1125	Recreational Therapists	Bachelor's degree
29-1126	Respiratory Therapists	Associate degree
29-1127	Speech-Language Pathologists	Master's degree
29-1129	Therapists, All Other	Bachelor's degree
29-1131	Veterinarians	First professional degree
29-1199	Health Diagnosing and Treating Practitioners, All Other	Bachelor's degree
29-2011	Medical and Clinical Laboratory Technologists	Bachelor's degree
29-2012	Medical and Clinical Laboratory Technicians	Associate degree
29-2021	Dental Hygienists	Associate degree
29-2031	Cardiovascular Technologists and Technicians	Associate degree
29-2032	Diagnostic Medical Sonographers	Associate degree
29-2033	Nuclear Medicine Technologists	Associate degree
29-2034	Radiologic Technologists and Technicians	Associate degree

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Healthcare Practitioners and Technical Workers		
SOC Code	Occupation	Education/Training Requirement
29-2041	Emergency Medical Technicians and Paramedics	Postsecondary vocational training
29-2051	Dietetic Technicians	Postsecondary vocational training
29-2052	Pharmacy Technicians	Moderate-term on-the-job training
29-2053	Psychiatric Technicians	Postsecondary vocational training
29-2054	Respiratory Therapy Technicians	Associate degree
29-2055	Surgical Technologists	Postsecondary vocational training
29-2056	Veterinary Technologists and Technicians	Associate degree
29-2061	Licensed Practical and Licensed Vocational Nurses	Postsecondary vocational training
29-2071	Medical Records and Health Information Technicians	Associate degree
29-2081	Opticians, Dispensing	Long-term on-the-job training
29-2091	Orthotists and Prosthetists	Bachelor's degree
29-2099	Health Technologists and Technicians, All Other	Postsecondary vocational training
29-9011	Occupational Health and Safety Specialists	Bachelor's degree
29-9012	Occupational Health and Safety Technicians	Bachelor's degree
29-9091	Athletic Trainers	Bachelor's degree
29-9099	Healthcare Practitioners and Technical Workers, All Other	Bachelor's degree

Healthcare Support Workers		
SOC Code	Occupation	Education/Training Requirement
31-1011	Home Health Aides	Short-term on-the-job training
31-1012	Nursing Aides, Orderlies, and Attendants	Postsecondary vocational training
31-1013	Psychiatric Aides	Short-term on-the-job training
31-2011	Occupational Therapist Assistants	Associate degree
31-2012	Occupational Therapist Aides	Short-term on-the-job training
31-2021	Physical Therapist Assistants	Associate degree
31-2022	Physical Therapist Aides	Short-term on-the-job training
31-9011	Massage Therapists	Postsecondary vocational training
31-9091	Dental Assistants	Moderate-term on-the-job training
31-9092	Medical Assistants	Moderate-term on-the-job training
31-9093	Medical Equipment Preparers	Short-term on-the-job training
31-9094	Medical Transcriptionists	Postsecondary vocational training
31-9095	Pharmacy Aides	Short-term on-the-job training
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	Short-term on-the-job training
31-9099	Healthcare Support Workers, All Other	Short-term on-the-job training

## **Appendix II—National Health Expenditure Category Definitions:**

- Hospital care covers all services provided by public and private hospitals.
- Physician and clinical services covers all services provided by establishments operated by MDs and DOs, outpatient care centers, plus the portion of medical laboratories services that are billed independently by the laboratories. This category also includes services rendered by a MD or DO in hospitals, if the physician bills independently for those services.
- Other professional services include any services provided by health practitioners other than physicians and dentists. Services by private duty nurses, chiropractors, optometrists, physical, occupational and speech therapists are included here.
- Dental covers services of establishments operated by a DMD or DDS or a DDS.
- Home health covers medical care provided in the home by private and public non-facility-based home health agencies.
- Nursing home care covers services provided in private and public freestanding nursing home facilities.
- Rx (prescription drugs) and Nondurable Medical Products covers the retail sales of drugs, prescription and non prescription, as well as “medical sundries.”
- Durable medical equipment covers ‘retail’ sales of items such as contact lenses, eyeglasses and other ophthalmic products, surgical and orthopedic products, hearing aids, wheelchairs and medical equipment rentals.
- Other personal healthcare covers “industrial in-plan medical care; that is medical care provided by private sector employers for employees at the work site. It also covers government expenditures for care not specified by service. These government expenditures are frequently for medical care delivered in unconventional providers’ sites such as schools, military field stations and community centers. Payments provided through Home and Community-based waivers in the Medicaid program are included in other personal healthcare as well.”<sup>52</sup>

## Appendix III—Per Capita PHCE vs. Per Capita Healthcare Workers by State, 2004

Number of Healthcare Workers Vs. Healthcare Spending, Per Capita, 2004		
State	Per Capita	# HC Workers Per Thousand Pop.
District of Columbia	\$ 8,295	64.7
North Dakota	\$ 5,808	44.3
Massachusetts	\$ 6,683	43.1
Nebraska	\$ 5,599	41.7
Minnesota	\$ 5,795	41.5
South Dakota	\$ 5,327	41.4
Rhode Island	\$ 6,193	41.1
<b>Maine</b>	<b>\$ 6,540</b>	<b>40.0</b>
Pennsylvania	\$ 5,933	39.3
Ohio	\$ 5,725	39.3
Kansas	\$ 5,382	39.0
Connecticut	\$ 6,344	38.4
Vermont	\$ 6,069	38.3
Missouri	\$ 5,444	38.3
Wisconsin	\$ 5,670	38.1
Iowa	\$ 5,380	37.8
West Virginia	\$ 5,954	37.2
New York	\$ 6,535	37.1
Louisiana	\$ 5,040	35.6
Tennessee	\$ 5,464	35.6
Kentucky	\$ 5,473	35.1
Delaware	\$ 6,306	35.0
North Carolina	\$ 5,191	34.5
Montana	\$ 5,080	34.3
Oklahoma	\$ 4,917	34.1
Indiana	\$ 5,295	33.8
Arkansas	\$ 4,863	33.3
Michigan	\$ 5,058	33.2
Wyoming	\$ 5,265	33.2
New Hampshire	\$ 5,432	33.2

Cont'd

Number of Healthcare Workers Vs. Healthcare Spending, Per Capita, 2004, CONT'D.		
State	Per Capita PHCE	# HC Workers Per Thousand Pop.
New Jersey	\$ 5,807	33.1
Alabama	\$ 5,135	32.5
Illinois	\$ 5,293	32.3
Mississippi	\$ 5,059	<b>32.1</b>
Florida	\$ 5,483	31.9
South Carolina	\$ 5,114	31.3
Maryland	\$ 5,590	31.1
Virginia	\$ 4,822	30.1
New Mexico	\$ 4,471	30.0
Washington	\$ 5,092	29.9
Idaho	\$ 4,444	29.8
Texas	\$ 4,601	29.5
Colorado	\$ 4,717	29.3
Oregon	\$ 4,880	29.1
Georgia	\$ 4,600	28.8
Alaska	\$ 6,450	28.7
Utah	\$ 3,972	28.3
Hawaii	\$ 4,941	27.3
Arizona	\$ 4,103	26.6
California	\$ 4,638	25.1
Nevada	\$ 4,569	23.5

## Appendix IV—"Other" Healthcare Occupations (Occupations not itemized in Figures 21, 22, 23, 24)

"Other" Healthcare Occupations (Occupations not itemized in figures 21, 22, 23, 24)	
<u>Hospitals</u>	<u>Ambulatory Care Services</u>
Emergency Medical Technicians and Paramedics	Medical and Clinical Laboratory Technicians
Surgical Technologists	Physician Assistants
Medical Records and Health Information Tech	Medical Records and Health Information Technicians
Medical and Clinical Laboratory Technicians	Speech-Language Pathologists
Physical Therapists	Healthcare Support Workers, All Other
Family and General Practitioners	Healthcare Practitioners and Technical Workers, AO
Medical Transcriptionists	Chiropractors
Pharmacy Technicians	Medical Transcriptionists
Physician Assistants	Opticians, Dispensing
Occupational Therapists	Optometrists
Cardiovascular Technologists and Technicians	Anesthesiologists
Medical Equipment Preparers	Occupational Therapists
Pharmacists	Pediatricians, General
Healthcare Support Workers, All Other	Psychiatrists
Diagnostic Medical Sonographers	Physical Therapist Aides
Dietitians and Nutritionists	Surgical Technologists
Internists, General	Massage Therapists
Radiation Therapists	Dietitians and Nutritionists
Dietetic Technicians	Obstetricians and Gynecologists
Surgeons	Podiatrists
Respiratory Therapy Technicians	Pharmacists
Physical Therapist Assistants	Health Technologists and Technicians, AO
Nuclear Medicine Technologists	Pharmacy Technicians
Physical Therapist Aides	Medical Equipment Preparers
Anesthesiologists	Diagnostic Medical Sonographers
Obstetricians and Gynecologists	Psychiatric Technicians
Pediatricians, General	Physical Therapist Assistants
Psychiatrists	
Speech-Language Pathologists	
Health Technologists and Technicians, All Other	
Healthcare Practitioners and Technical Workers, All Other	
Occupational Therapist Assistants	
Recreational Therapists	
Home Health Aides	
Therapists, All Other	
Occupational Health and Safety Specialists	
<u>Nursing &amp; Residential Care Facilities</u>	<u>Social Assistance</u>
Recreational Therapists	Dietetic Technicians
Medical Records and Health Information Technicians	Other occupations NA
Physical Therapists	
Dietitians and Nutritionists	
Occupational Therapists	
Dietetic Technicians	
Occupational Therapist Assistants	
Physical Therapist Aides	

## Appendix V—Occupational Employment Forecasts

*These forecasts are produced every other year and currently address the 2006-2016 period.*

Employment and Job Openings for All Occupations in Maine in 2006 and Projected 2016 (Sorted by Average Annual Openings)									
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings			Education/Training Requirement
		2006	2016	Net	Percent	Growth	Replacement	Total	
29-1111	Registered Nurses	14,048	17,045	2,997	21.3%	300	232	532	Associate degree
31-1012	Nursing Aides, Orderlies, and Attendants	10,039	10,816	777	7.7%	78	90	168	Postsecondary vocational training
31-1011	Home Health Aides	4,949	5,957	1,008	20.4%	101	44	145	Short-term on-the-job training
29-2052	Pharmacy Technicians	1,562	2,072	510	32.7%	51	48	99	Moderate-term on-the-job training
31-9092	Medical Assistants	1,949	2,603	654	33.6%	65	24	89	Moderate-term on-the-job training
29-2061	Licensed Practical and Licensed Vocational Nurses	1,824	1,931	107	5.9%	11	50	61	Postsecondary vocational training
29-1051	Pharmacists	1,169	1,431	262	22.4%	26	20	46	First professional degree
29-2041	Emergency Medical Technicians and Paramedics	1,362	1,642	280	20.6%	28	16	44	Postsecondary vocational training
29-1069	Physicians and Surgeons, All Other	1,435	1,600	165	11.5%	17	26	43	First professional degree
31-9091	Dental Assistants	1,066	1,286	220	20.6%	22	19	41	Moderate-term on-the-job training
29-2021	Dental Hygienists	977	1,175	198	20.3%	20	19	39	Associate degree
29-2034	Radiologic Technologists and Technicians	1,106	1,327	221	20.0%	22	15	37	Associate degree
29-1123	Physical Therapists	985	1,215	230	23.4%	23	12	35	Master's degree
29-2011	Medical and Clinical Laboratory Technologists	887	1,110	223	25.1%	22	13	35	Bachelor's degree
29-2071	Medical Records and Health Information Technicians	768	894	126	16.4%	13	21	34	Associate degree
29-2056	Veterinary Technologists and Technicians	525	671	146	27.8%	15	16	31	Associate degree
29-2055	Surgical Technologists	443	561	118	26.6%	12	14	26	Postsecondary vocational training
29-2012	Medical and Clinical Laboratory Technicians	756	896	140	18.5%	14	11	25	Associate degree
29-1071	Physician Assistants	594	728	134	22.6%	13	8	21	Master's degree
29-1131	Veterinarians	472	588	116	24.6%	12	9	21	First professional degree
29-1062	Family and General Practitioners	781	838	57	7.3%	6	14	20	First professional degree
29-1122	Occupational Therapists	680	766	86	12.6%	9	10	19	Master's degree

Cont'd Next Page

**Employment and Job Openings for All Occupations in Maine in 2006 and Projected 2016**  
*(Sorted by Average Annual Openings)*

SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings			Education/Training Requirement
		2006	2016	Net	Percent	Growth	Replacement	Total	
29-1126	Respiratory Therapists	493	607	114	23.1%	11	7	18	Associate degree
31-9011	Massage Therapists	731	833	102	14.0%	10	8	18	Postsecondary vocational training
31-9099	Healthcare Support Workers, All Other	581	682	101	17.4%	10	7	17	Short-term on-the-job training
31-9094	Medical Transcriptionists	602	694	92	15.3%	9	8	17	Postsecondary vocational training
29-1127	Speech-Language Pathologists	700	721	21	3.0%	2	14	16	Master's degree
29-9099	Healthcare Practitioners and Technical Workers, All Other	362	437	75	20.7%	8	7	15	Bachelor's degree
31-1013	Psychiatric Aides	629	708	79	12.6%	8	6	14	Short-term on-the-job training
29-1063	Internists, General	499	527	28	5.6%	3	9	12	First professional degree
29-1067	Surgeons	516	543	27	5.2%	3	9	12	First professional degree
29-2053	Psychiatric Technicians	218	261	43	19.7%	4	7	11	Postsecondary vocational training
29-1199	Health Diagnosing and Treating Practitioners, All Other	272	326	54	19.9%	5	5	10	Bachelor's degree
29-1031	Dietitians and Nutritionists	311	326	15	4.8%	2	8	10	Bachelor's degree
29-2081	Opticians, Dispensing	289	302	13	4.5%	1	9	10	Long-term on-the-job training
29-1021	Dentists, General	505	506	1	0.2%	0	10	10	First professional degree
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	645	662	17	2.6%	2	8	10	Short-term on-the-job training
29-1011	Chiropractors	397	444	47	11.8%	5	4	9	First professional degree
31-2021	Physical Therapist Assistants	196	260	64	32.7%	6	3	9	Associate degree
29-2031	Cardiovascular Technologists and Technicians	207	260	53	25.6%	5	3	8	Associate degree
29-2051	Dietetic Technicians	174	196	22	12.6%	2	5	7	Postsecondary vocational training
29-1066	Psychiatrists	209	227	18	8.6%	2	4	6	First professional degree
29-1081	Podiatrists	135	142	7	5.2%	1	5	6	First professional degree
31-9093	Medical Equipment Preparers	226	259	33	14.6%	3	3	6	Short-term on-the-job training
29-1124	Radiation Therapists	107	135	28	26.2%	3	2	5	Associate degree
29-2032	Diagnostic Medical Sonographers	160	186	26	16.3%	3	2	5	Associate degree
29-1061	Anesthesiologists	179	201	22	12.3%	2	3	5	First professional degree
31-2022	Physical Therapist Aides	152	184	32	21.1%	3	2	5	Short-term on-the-job training
31-2011	Occupational Therapist Assistants	155	180	25	16.1%	3	2	5	Associate degree
29-1041	Optometrists	120	143	23	19.2%	2	2	4	First professional degree
29-1065	Pediatricians, General	169	181	12	7.1%	1	3	4	First professional degree
29-9011	Occupational Health and Safety Specialists	233	229	-4	-1.7%	0	4	4	Bachelor's degree
29-2099	Health Technologists and Technicians, All Other	101	116	15	14.9%	2	1	3	Postsecondary vocational training
29-1064	Obstetricians and Gynecologists	119	133	14	11.8%	1	2	3	First professional degree
29-2033	Nuclear Medicine Technologists	72	84	12	16.7%	1	1	2	Associate degree
29-2054	Respiratory Therapy Technicians	77	79	2	2.6%	0	2	2	Associate degree
29-1125	Recreational Therapists	105	104	-1	-1.0%	0	2	2	Bachelor's degree
31-2012	Occupational Therapist Aides	32	37	5	15.6%	1	1	2	Short-term on-the-job training
31-9095	Pharmacy Aides	191	167	-24	-12.6%	0	2	2	Short-term on-the-job training
29-9091	Athletic Trainers	72	76	4	5.6%	0	1	1	Bachelor's degree
29-9012	Occupational Health and Safety Technicians	43	46	3	7.0%	0	1	1	Bachelor's degree
29-1129	Therapists, All Other	51	45	-6	-11.8%	0	1	1	Bachelor's degree
29-2091	Orthotists and Prosthetists	11	10	-1	-9.1%	0	0	0	Bachelor's degree

## Appendix VI—Healthcare Occupations Data Sheets

For each occupation, the following is provided:

- Occupation descriptions
- Sample of reported job titles
- Education Requirement\*
- Occupational Outlook (2006-2016)\*
- Maine Employment and Expected Job Openings
- Occupational Wages, Maine & USA
- National Employment\*\*
- Maine Schools and Program Completers by Degree\*\*\*
- Help Wanted Online Advertising Trend

\*Source: OSDS (text is taken directly from OSDS website; OSDS uses the BLS as its information source). For physicians and surgeons, radiation therapists, text is taken directly from the Occupational Outlook Handbook, 2010-11 Edition from the BLS website.

\*\*Uses 2008-2018 national employment forecasts from the BLS. These are newer BLS occupational forecasts and will differ from the 2006-2016 forecasts.

\*\*\*Source: OSDS. AMA survey data is used when it is available. The limitations of these sources are discussed in the section of this report titled, “Occupational Program Completer Analysis.”

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## 29-1111.00 - Registered Nurses

**Occupation Description:** Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes advance practice nurses such as: nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists. Advanced practice nursing is practiced by RNs who have specialized formal, post-basic education and who function in highly autonomous and specialized roles.

**Sample of reported job titles:** Registered Nurse (RN), Staff RN (Staff Registered Nurse), Staff Nurse, Charge Nurse, Operating Room Registered Nurse (OR RN), Oncology RN (Oncology Registered Nurse), Relief Charge Nurse, Cardiac Care Unit Nurse (CCU Nurse), Certified Nurse Operating Room (CNOR), Coronary Care Unit Nurse (CCU Nurse)

**Educational Requirement:** There are three major educational paths to registered nursing—a bachelor's of science degree in nursing (BSN), an associate degree in nursing (ADN), and a diploma. BSN programs, offered by colleges and universities, take about 4 years to complete. In 2006, 709 nursing programs offered degrees at the bachelor's level. ADN programs, offered by community and junior colleges, take about 2 to 3 years to complete. About 850 RN programs granted associate degrees. Diploma programs, administered in hospitals, last about 3 years. Only about 70 programs offered diplomas. Generally, licensed graduates of any of the three types of educational programs qualify for entry-level positions.

**Occupational Outlook:** Employment of registered nurses is expected to grow 23 percent from 2006 to 2016, much faster than the average for all occupations. Growth will be driven by technological advances in patient care, which permit a greater number of health problems to be treated, and by an increasing emphasis on preventive care. In addition, the number of older people, who are much more likely than younger people to need nursing care, is projected to grow rapidly.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1111	Registered Nurses	14,048	17,045	2,997	21.3%	300	232	532

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$21.86	\$31.99	\$28.61	\$31.31

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Registered nurses	2,618,700	3,200,200	22%	103,900

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

There are five baccalaureate nursing degree programs accredited by the Commission of Collegiate Nursing Education (CCNE): Husson University, Saint Joseph's College of Maine, University of Maine, University of Maine at Fort Kent and University of Southern Maine. The following statistics on program completers were provided by the Occupational Supply Demand System (OSDS) which uses the Integrated Postsecondary Education Data System (IPEDS) as its data source.

**Program of Study and Training: 51.1601 Nursing - Registered Nurse Training (RN, ASN, BSN, MSN)**

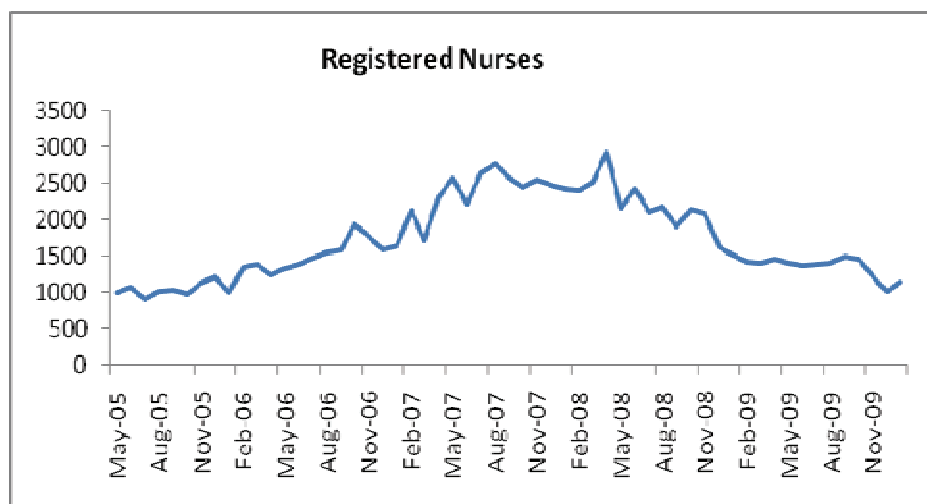
	Market Share	Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
<b>Associate's degree</b>																
1	Central Maine Community College	3	16	19	0	23	23	2	19	21	2	21	23	5	16	21
2	Eastern Maine Community College	3	19	22	2	26	28	4	19	23	3	19	22	2	25	27
3	Kennebec Valley Community College	1	40	41	3	28	31	0	33	33	4	34	38	1	31	32
4	Northern Maine Community College	3	29	32	7	29	36	2	18	20	2	35	37	3	17	20
5	Southern Maine Community College	9	45	54	7	47	54	7	45	52	4	47	51	6	35	41
6	University of Maine at Augusta	3	47	50	3	49	52	7	54	61	8	69	77	3	46	49
7	University of New England	4	44	48	12	60	72	8	58	66	9	58	67	4	53	57
	<b>Subtotal</b>	<b>26</b>	<b>240</b>	<b>266</b>	<b>34</b>	<b>262</b>	<b>296</b>	<b>30</b>	<b>246</b>	<b>276</b>	<b>32</b>	<b>283</b>	<b>315</b>	<b>24</b>	<b>223</b>	<b>247</b>
<b>Graduated at least 2 but less than 4 academic year</b>																
1	Eastern Maine Community College	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1
<b>Bachelor's degree</b>																
1	Husson University	1	36	37	2	29	31	0	25	25	2	48	50	1	37	38
2	Saint Joseph's College of Maine	1	39	40	4	46	50	2	61	63	2	65	67	2	69	71
3	University of Maine	5	69	74	9	92	101	12	69	81	1	87	88	9	85	94
4	University of Maine at Fort Kent	1	12	13	2	20	22	3	13	16	4	34	38	9	43	52
5	University of New England	1	7	8	2	9	11	0	5	5	0	0	0	2	10	12
6	University of Southern Maine	16	105	121	14	123	137	21	139	160	15	130	145	25	147	172
	<b>Subtotal</b>	<b>25</b>	<b>268</b>	<b>293</b>	<b>33</b>	<b>319</b>	<b>352</b>	<b>38</b>	<b>312</b>	<b>350</b>	<b>24</b>	<b>364</b>	<b>388</b>	<b>48</b>	<b>391</b>	<b>439</b>
<b>Master's degree</b>																
1	Husson University	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
2	University of Maine	1	6	7	2	6	8	0	8	8	1	14	15	0	3	3
3	University of Southern Maine	0	25	25	4	30	34	2	19	21	1	26	27	0	28	28
	<b>Subtotal</b>	<b>1</b>	<b>33</b>	<b>34</b>	<b>6</b>	<b>36</b>	<b>42</b>	<b>2</b>	<b>27</b>	<b>29</b>	<b>2</b>	<b>40</b>	<b>42</b>		<b>31</b>	<b>31</b>
<b>Post-Masters certificate</b>																
1	Husson University	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	University of Maine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Subtotal</b>															
<b>Doctor's degree</b>																
1	University of Maine	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0
	<b>Program Completer Total</b>	<b>52</b>	<b>541</b>	<b>593</b>	<b>73</b>	<b>619</b>	<b>692</b>	<b>71</b>	<b>585</b>	<b>656</b>	<b>58</b>	<b>687</b>	<b>745</b>	<b>72</b>	<b>646</b>	<b>718</b>

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

Program of Study and Training: 51.1604 Nurse Anesthetist																	
Market Share			Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Master's degree																	
1	University of New England		13	15	28	12	18	30	12	18	30	13	19	32	5	21	26
	Program Completer Total		13	15	28	12	18	30	12	18	30	13	19	32	5	21	26
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
Program of Study and Training: 51.1605 Family Practice Nurse/Nurse Practitioner																	
Market Share			Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Master's degree																	
1	Husson University		1	6	7	0	4	4	0	4	4	1	15	16	0	8	8
Post-Masters certificate																	
1	Husson University		0	0	0	0	3	3	0	0	0	0	2	2	0	0	0
2	University of Southern Maine		1	3	4	0	2	2	0	0	0	0	1	1	0	0	0
	Subtotal		1	3	4		5	5					3	3			
	Program Completer Total		2	9	11		9	9		4	4	1	18	19		8	8
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
Program of Study and Training: 51.1610 Psychiatric/Mental Health Nurse/Nursing																	
Market Share			Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Master's degree																	
1	Husson University		0	7	7	0	3	3	1	5	6	3	5	8	0	0	0
Post-Masters certificate																	
1	Husson University		0	1	1	0	3	3	0	0	0	0	1	1	0	0	0
2	University of Southern Maine		0	3	3	0	3	3	0	4	4	0	0	0	0	0	0
	Subtotal			4	4		6	6		4	4		1	1			
	Program Completer Total			11	11		9	9	1	9	10	3	6	9			
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
Program of Study and Training: 51.1699 Nursing, Other																	
Market Share			Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																	
1	Central Maine Medical Center College of Nursing and Health Professions		8	39	47	4	38	42	12	39	51	7	35	42	8	30	38
Master's degree																	
1	Husson University		0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
	Program Completer Total		8	39	47	4	38	42	12	39	51	7	36	43	8	30	38
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads without Duplicates



## 29-2061.00 - Licensed Practical and Licensed Vocational Nurses

**Occupation Description:** Care for ill, injured, convalescent, or disabled persons in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.

**Sample of reported job titles:** Licensed Practical Nurse (LPN), Charge Nurse, Licensed Vocational Nurse (LVN), Clinic Licensed Practical Nurse (CLINIC LPN), Pediatric Licensed Practical Nurse (PEDIATRIC LPN), Clinic Nurse, Office Nurse, Private Duty Nurse, Triage Licensed Practical Nurse (TRIAGE LPN)

**Educational Requirement:** Postsecondary Vocational Training. All States and the District of Columbia require LPNs to pass a licensing examination, known as the NCLEX-PN, after completing a State-approved practical nursing program. A high school diploma or its equivalent usually is required for entry, although some programs accept candidates without a diploma, and some programs are part of a high school curriculum. In 2006, there were more than 1,500 State-approved training programs in practical nursing. Most training programs are available from technical and vocational schools or community and junior colleges. Other programs are available through high schools, hospitals, and colleges and universities. Most year-long practical nursing programs include both classroom study and supervised clinical practice (patient care).

**Occupational Outlook:** Employment of LPNs is expected to grow 14 percent between 2006 and 2016, faster than the average for all occupations, in response to the long-term care needs of an increasing elderly population and the general increase in demand for health care services.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2061	Licensed Practical Nurses	1824	1931	107	5.9%	11	50	61

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$16.34	\$20.47	\$19.10	\$19.28



## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Licensed Practical Nurses	753,600	909,200	+21%	39,130

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

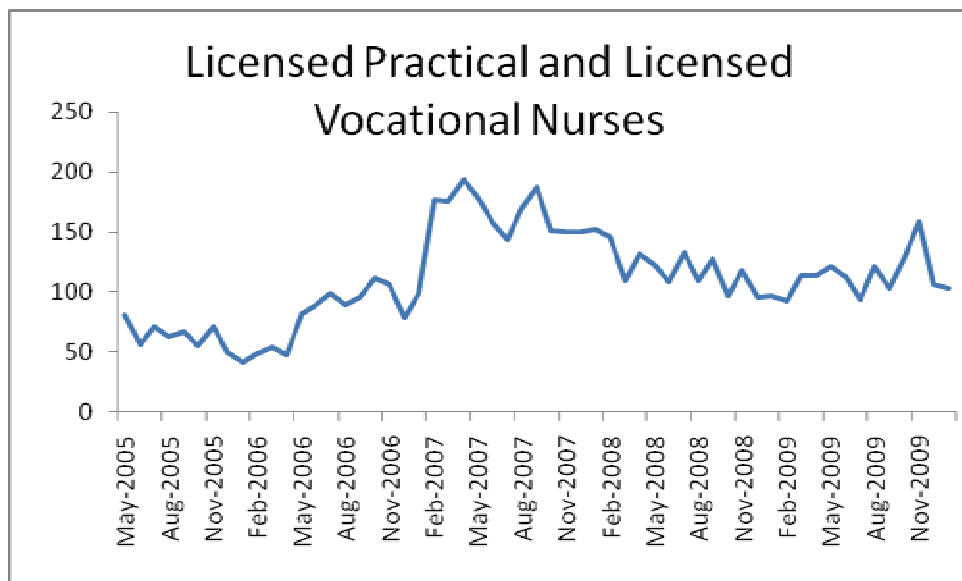
## Schools and Program Completers by Degree

Program of Study and Training: 51.1613 Licensed Practical /Vocational Nurse Training (LPN, LVN, Cert, Dipl, AAS)																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award at least 1 but less than 2 academic years																
1	Central Maine Community College	0	13	13	0	13	13	0	15	15	5	14	19	0	12	12
2	Kennebec Valley Community College	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0
3	Northern Maine Community College	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0
4	Southern Maine Community College	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal			28	28		13	13		16	16	5	14	19		12	12
Program Completer Total			28	28		13	13		16	16	5	14	19		12	12

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1021.00 - Dentists, General

**Occupation Description:** Diagnose and treat diseases, injuries, and malformations of teeth and gums and related oral structures. May treat diseases of nerve, pulp, and other dental tissues affecting vitality of teeth.

**Sample of reported job titles:** Dentist, General Dentist, Dental Surgery Doctor (DDS), Dental Medicine Doctor (DMD)

**Educational Requirement:** First Professional Degree. All 50 States and the District of Columbia require dentists to be licensed. To qualify for a license in most States, candidates must graduate from an accredited dental school and pass written and practical examinations. In 2006, there were 56 dental schools accredited by the American Dental Association's (ADA's) Commission on Dental Accreditation. Dental schools require a minimum of 2 years of college-level predental education prior to admittance. Most dental students have at least a bachelor's degree before entering dental school, although a few applicants are accepted to dental school after 2 or 3 years of college and complete their bachelor's degree while attending dental school. Dental school usually lasts 4 academic years. Most dental schools award the degree of Doctor of Dental Surgery (DDS). Others award an equivalent degree, Doctor of Dental Medicine (DMD).

**Occupational Outlook:** Employment of dentists is projected to grow nine percent through 2016, about as fast as the average for all occupations. The demand for dental services is expected to continue to increase. The overall population is growing, particularly the number of older people, which will increase the demand for dental care. As members of the baby-boom generation advance into middle age, a large number will need complicated dental work, such as bridges. In addition, elderly people are more likely to retain their teeth than were their predecessors, so they will require much more care than in the past. The younger generation will continue to need preventive checkups despite an overall increase in the dental health of the public over the last few decades. Recently, some private insurance providers have increased their dental coverage. If this trend continues, those with new or expanded dental insurance will be more likely to visit a dentist than in the past. Also, while they are currently a small proportion of dental expenditures, cosmetic dental services, such as fitting braces for adults as well as children and providing teeth-whitening treatments, have become increasingly popular.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1021	Dentists, General	505	506	1	0.2%	0	10	10

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$50.27	\$105.17	\$86.87	\$74.17

## National Employment

United States	Employment		Percent	Annual Job Opening <sup>s 1</sup>
	2008	2018	Change	
Dentists, General	120,200	138,600	+15%	5,180

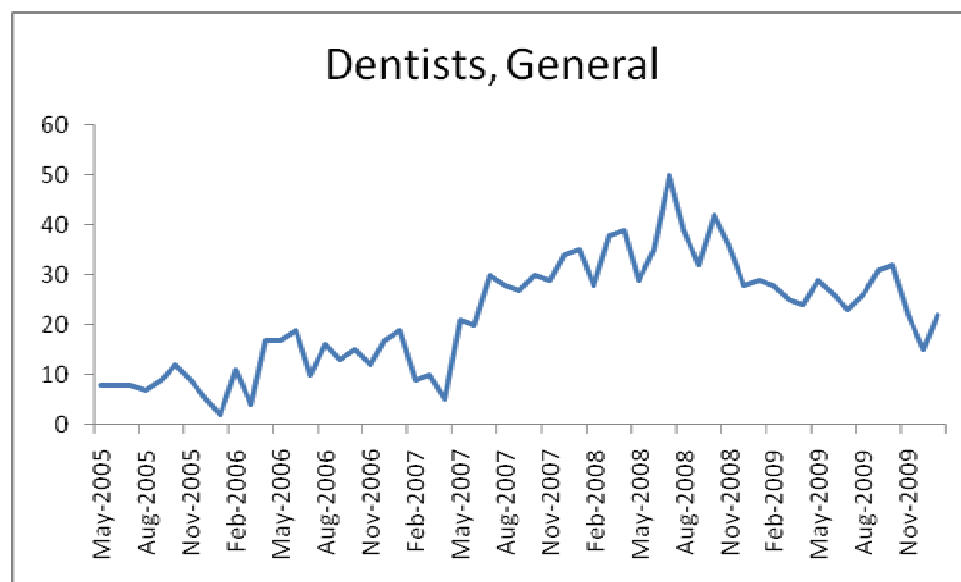
<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

There are no dental schools in Maine. The University of New England is seeking funding to start a dental school.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads without Duplicates



## 29-2021.00 - Dental Hygienists

**Occupation Description:** Clean teeth and examine oral areas, head, and neck for signs of oral disease. May educate patients on oral hygiene, take and develop X-rays, or apply fluoride or sealants.

**Sample of reported job titles:** Dental Hygienist, Registered Dental Hygienist (RDH), Hygienist

**Educational Requirement:** Associate's Degree. A high school diploma and college entrance test scores are usually required for admission to a dental hygiene program. In 2006, there were 286 dental hygiene programs accredited by the Commission on Dental Accreditation. Most dental hygiene programs grant an associate degree, although some also offer a certificate, a bachelor's degree, or a master's degree. A minimum of an associate degree or certificate in dental hygiene is generally required for practice in a private dental office. A bachelor's or master's degree usually is required for research, teaching, or clinical practice in public or school health programs. Dental hygienists must be licensed by the State in which they practice.

**Occupational Outlook:** Employment of dental hygienists is expected to grow 30 percent through 2016, much faster than the average for all occupations. This projected growth ranks dental hygienists among the fastest growing occupations, in response to increasing demand for dental care and the greater use of hygienists.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2021	Dental Hygienists	977	1175	198	20.3%	20	19	39

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$24.03	\$31.55	\$29.04	\$32.19

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Dental Hygienists	174,100	237,000	+36%	9840

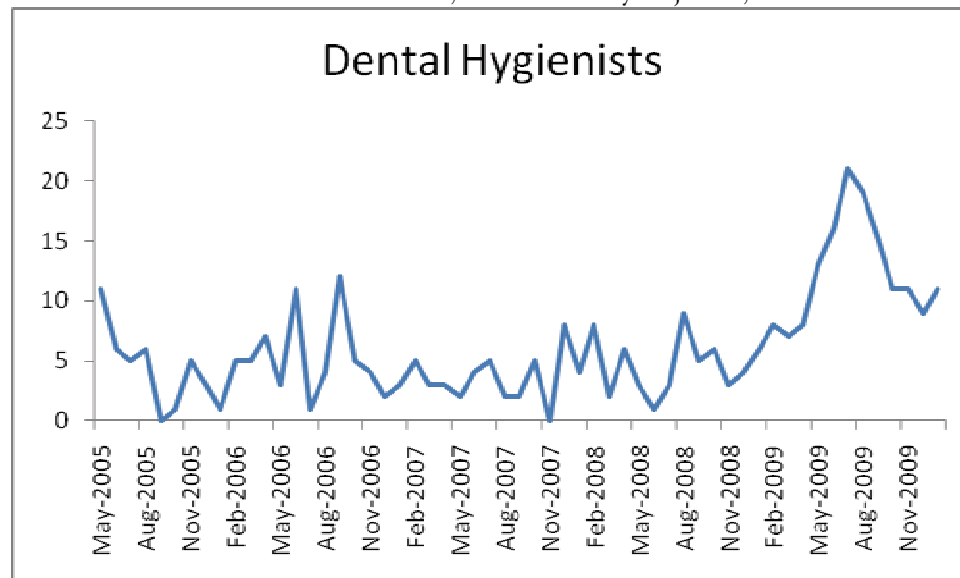
<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0602 Dental Hygiene/Hygienist																	
	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Associate's degree																	
1	University of Maine at Augusta	0	20	20	0	19	19	1	17	18	1	22	23	3	19	22	
2	University of New England	4	23	27	0	37	37	1	49	50	0	60	60	1	41	42	
	Subtotal	4	43	47		56	56	2	66	68	1	82	83	4	60	64	
Bachelor's degree																	
1	University of Maine at Augusta	0	0	0	0	0	0	0	3	3	0	0	0	0	2	2	
2	University of New England	0	7	7	1	7	8	0	8	8	0	0	0	0	22	22	
	Subtotal		7	7	1	7	8		11	11					24	24	
	Program Completer Total	4	50	54	1	63	64	2	77	79	1	82	83	4	84	88	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
AMA Number of Programs				2			2			2							
AMA Number of Completers				60			58			78			83				
Source: AMA																	

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9091.00 - Dental Assistants

**Occupation Description:** Assist dentist, set up patient and equipment, and keep records.

**Sample of reported job titles:** Dental Assistant, Registered Dental Assistant (RDA), Certified Dental Assistant (CDA), Expanded Duties Dental Assistant (EDDA), Orthodontic Assistant, Certified Registered Dental Assistant, Oral Surgery Assistant, Surgical Dental Assistant, Expanded Dental Assistant, Expanded Duty Dental Assistant

**Educational Requirement and Occupational Outlook:** Most assistants learn their skills on the job, although an increasing number are trained in dental-assisting programs offered by community and junior colleges, trade schools, technical institutes, or the Armed Forces. High school students interested in a career as a dental assistant should take courses in biology, chemistry, health, and office practices. For those wishing to pursue further education, the Commission on Dental Accreditation within the American Dental Association (ADA) approved 269 dental-assisting training programs in 2006. Programs include classroom, laboratory, and preclinical instruction in dental-assisting skills and related theory. In addition, students gain practical experience in dental schools, clinics, or dental offices. Most programs take 1 year or less to complete and lead to a certificate or diploma. Two-year programs offered in community and junior colleges lead to an associate degree. All programs require a high school diploma or its equivalent, and some require science or computer-related courses for admission. A number of private vocational schools offer 4- to 6-month courses in dental assisting, but the Commission on Dental Accreditation does not accredit these programs. A large number of dental assistants learn through on-the-job training. In these situations, the employing dentist or other dental assistants in the dental office teach the new assistant dental terminology, the names of the instruments, how to perform daily duties, how to interact with patients, and other things necessary to help keep the dental office running smoothly.

**Occupational Outlook:** Employment is expected to grow 29 percent from 2006 to 2016, which is much faster than the average for all occupations. In fact, dental assistants are expected to be among the fastest growing occupations over the 2006-16 projection period. Population growth, greater retention of natural teeth by middle-aged and older people, and an increased focus on preventative dental care for younger generations will fuel demand for dental services. Older dentists, who have been less likely to employ assistants or have employed fewer, are leaving the occupation and will be replaced by recent graduates, who are more likely to use one or more assistants. In addition, as dentists' workloads increase, they are expected to hire more assistants to perform routine tasks, so that they may devote their own time to more complex procedures.

## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9091	Dental Assistants	1066	1286	220	20.6%	22	19	41

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$12.90	\$17.94	\$16.26	\$15.95

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Dental Assistants	295,300	400,900	+36%	16,100

<sup>1</sup> Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

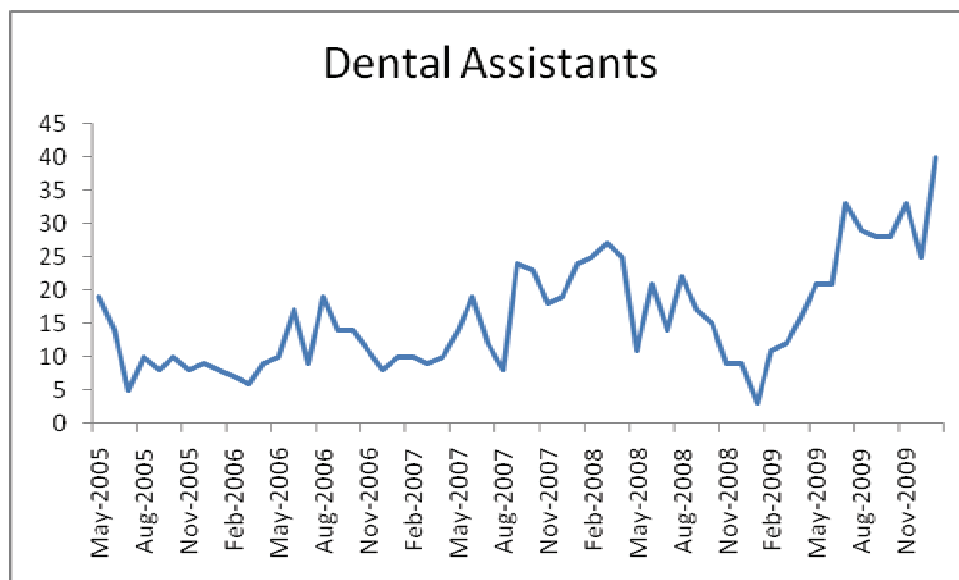
## Schools and Program Completers by Degree

Program of Study and Training: 51.0601 Dental Assisting/Assistant																		
➡	Market Share			Completers														
				2003-04			2004-05			2005-06			2006-07			2007-08		
	School			M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
	Award at least 1 but less than 2 academic years																	
1	University of Maine at Augusta			0	4	4	0	6	6	0	9	9	0	10	10	0	12	12
	Program Completer Total				4	4		6	6		9	9		10	10		12	12
AMA Number of Programs				1			1			1			1					
AMA Number of Completers				5			7			7			7					
Source: AMA																		

Source: AMA

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 29-1051.00 - Pharmacists

**Occupation Description:** Compound and dispense medications following prescriptions issued by physicians, dentists, or other authorized medical practitioners.

**Sample of reported job titles:** Pharmacist, Staff Pharmacist, Clinical Pharmacist, Pharmacist in Charge (PIC), Pharmacy Manager, Registered Pharmacist, Hospital Pharmacist, Outpatient Pharmacy Manager, Pharmacy Informaticist

**Educational Requirement:** First professional degree. A license to practice pharmacy is required in all States, the District of Columbia, and U.S. territories. In order to obtain a license, pharmacists must earn a Doctor of Pharmacy (Pharm.D.) degree from a college of pharmacy and pass several examinations. Pharmacists must earn a Pharm.D. degree from an accredited college or school of pharmacy. The Pharm.D. degree has replaced the Bachelor of Pharmacy degree, which is no longer being awarded. To be admitted to a Pharm.D. program, an applicant must have completed at least 2 years of postsecondary study, although most applicants have completed 3 or more years. Other entry requirements usually include courses in mathematics and natural sciences, such as chemistry, biology, and physics, as well as courses in the humanities and social sciences. In 2007, 92 colleges and schools of pharmacy were accredited to confer degrees by the Accreditation Council for Pharmacy Education (ACPE). About 70 percent of Pharm.D. programs require applicants to take the Pharmacy College Admissions Test (PCAT). In the 2006–07 academic year, 70 colleges of pharmacy also awarded the master-of-science degree or the Ph.D. degree. Both degrees are awarded after the completion of a Pharm.D. degree and are designed for those who want additional clinical, laboratory, and research experience.

**Occupational Outlook:** Employment of pharmacists is expected to grow by 22 percent between 2006 and 2016, which is much faster than the average for all occupations. The increasing numbers of middle-aged and elderly people—who use more prescription drugs than younger people—will continue to spur demand for pharmacists throughout the projection period. Other factors likely to increase the demand for pharmacists include scientific advances that will make more drug products available and the coverage of prescription drugs by a greater number of health insurance plans and Medicare.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1051	Pharmacists	1169	1431	262	22.4%	26	20	46

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$45.76	\$58.21	\$54.06	\$50.13

## National Employment

United States	Employment		Percent	Annual Job Opening <sup>s 1</sup>
	2008	2018	Change	
Pharmacists	269,900	315,800	+17%	10,580

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

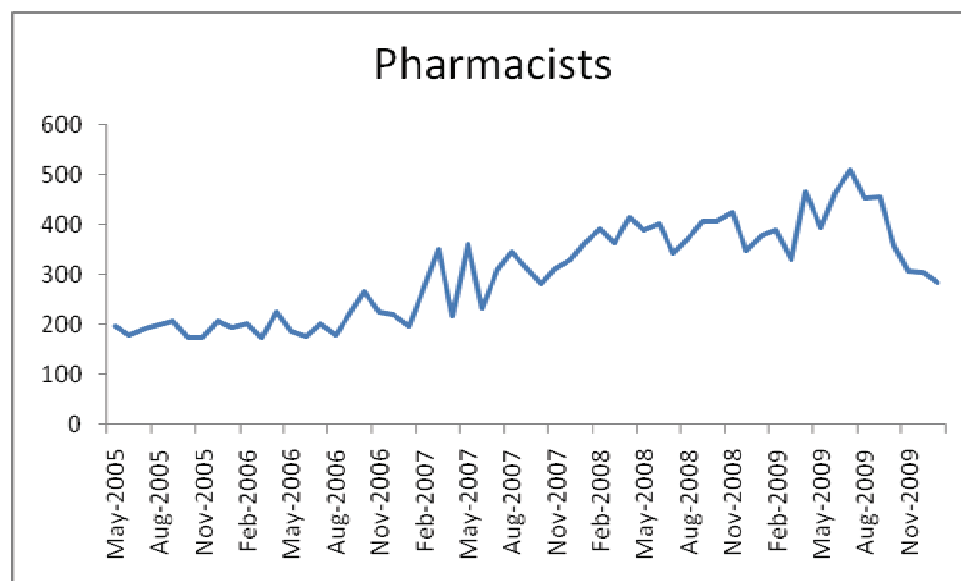
## Schools and Program Completers by Degree

The University of New England's College of Pharmacy enrolled its first class of doctoral students in the fall of 2009. The prepharmacy undergraduate program enrolled students beginning in 2007.

The Husson University School of Pharmacy will have its first graduating class in 2013. The class of 2013 began with 65 students.

## Help Wanted Online Job Advertisement Trend

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## 29-2052.00 - Pharmacy Technicians

**Occupation Description:** Prepare medications under the direction of a pharmacist. May measure, mix, count out, label, and record amounts and dosages of medications.

**Sample of reported job titles:** Pharmacy Technician, Certified Pharmacy Technician (CPhT), IV Certified Pharmacy Technician, Pharmaceutical Care Associate

**Educational Requirement:** Moderate term on-the-job training. Although most pharmacy technicians receive informal on-the-job training, employers favor those who have completed formal training and certification. However, there are currently few State and no Federal requirements for formal training or certification of pharmacy technicians. Employers who have insufficient resources to give on-the-job training often seek formally educated pharmacy technicians. Formal education programs and certification emphasize the technician's interest in and dedication to the work. In addition to the military, some hospitals, proprietary schools, vocational or technical colleges, and community colleges offer formal education programs.

**Occupational Outlook:** Employment of pharmacy technicians is expected to increase by 32 percent from 2006 to 2016, which is much faster than the average for all occupations. The increased number of middle-aged and elderly people—who use more prescription drugs than younger people—will spur demand for technicians throughout the projection period. In addition, as scientific advances bring treatments for an increasing number of conditions, more pharmacy technicians will be needed to fill a growing number of prescriptions.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2052	Pharmacy Technicians	1753	2239	486	51%	51	50	101

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$10.04	\$14.46	\$12.99	\$13.70

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Pharmacy Technicians	326,300	426,000	+31%	18,200

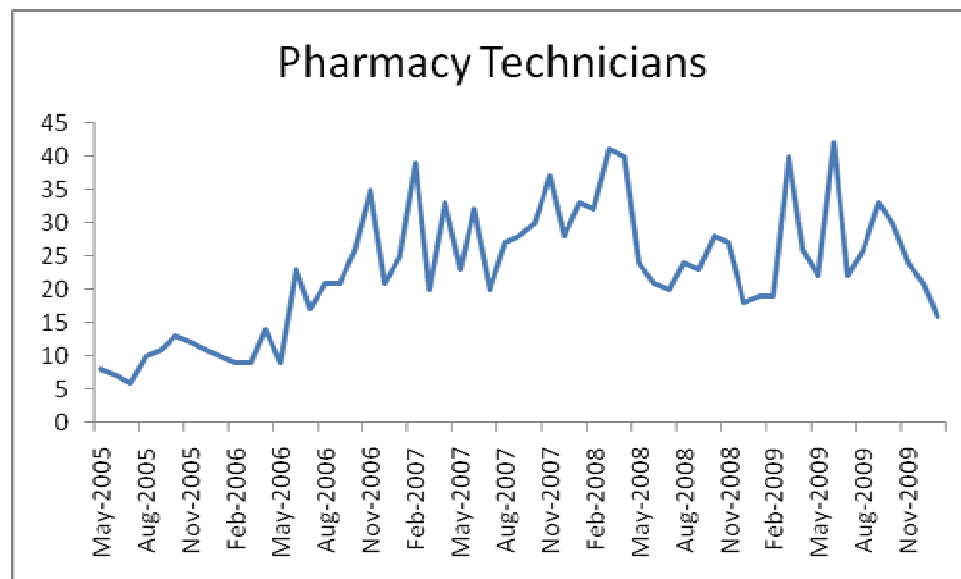
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## Schools and Program Completers by Degree

Program of Study and Training: 51.0805 Pharmacy Technician/Assistant																	
➡	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Award at least 1 but less than 2 academic years																	
1	Intercoast Career Institute	0	0	0	0	0	0	0	0	0	4	8	12	3	7	10	
Associate's degree																	
1	Southern Maine Community College	0	5	5	2	7	9	1	2	3	0	3	3	0	1	1	
	Program Completer Total		5	5	2	7	9	1	2	3	4	11	15	3	8	11	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
AMA Number of Programs				0			0			0			0				
AMA Number of Completers				0			0			0			0				
Source: AMA																	

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9095.00 - Pharmacy Aides

**Occupation Description:** Record drugs delivered to the pharmacy, store incoming merchandise, and inform the supervisor of stock needs. May operate cash register and accept prescriptions for filling.

**Sample of reported job titles:** Pharmacy Aide, Pharmacy Clerk, Certified Pharmacist Assistant, Pharmacy Assistant

**Educational Requirement and Occupational Outlook:** Short-term on-the-job Training. Most pharmacy aides receive informal on-the-job training, but employers favor those with at least a high school diploma.

**Occupational Outlook:** Employment of pharmacy aides is expected to decline rapidly, decreasing by 11 percent over the 2006 to 2016 period. Demand for pharmacy aides will fall as pharmacy technicians become increasingly responsible for answering phones, stocking shelves, operating cash registers, and performing other administrative tasks. In addition, with increased training, many pharmacy aides will become pharmacy technicians, which will result in further declines in pharmacy aide jobs.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9095	Pharmacy Aides	191	167	-24	-12.6%	0	2	2

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$8.50	\$11.04	\$10.19	\$10.34

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Pharmacy Aides	54,900	51,500	-6%	610

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

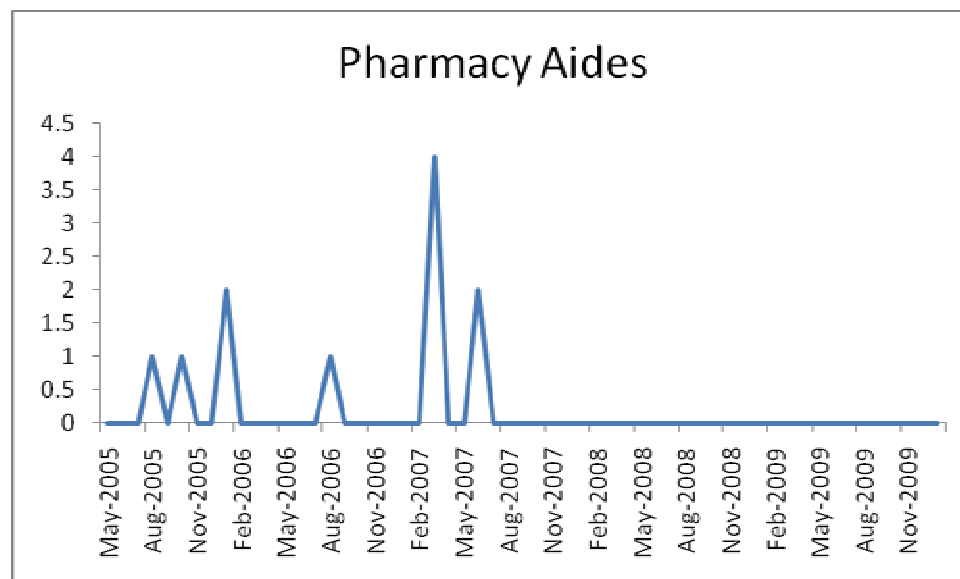
## Schools and Program Completers by Degree

Program of Study and Training: 51.0805 Pharmacy Technician/Assistant																	
🔄	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Award at least 1 but less than 2 academic years																	
1	Intercoast Career Institute	0	0	0	0	0	0	0	0	0	4	8	12	3	7	10	
Associate's degree																	
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## Help Wanted Online Job Advertisement Trend

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## 29-1061.00 - Anesthesiologists

**Occupation Description:** Administer anesthetics during surgery or other medical procedures.

**Sample of reported job titles:** Anesthesiologist, Staff Anesthesiologist, Medical Doctor (MD), Medical Director, Physician, Anesthesia Associate, Anesthesia Director, Attending Anesthesiologist, Obstetrical Anesthesiologist, Staff Anesthetist

**Educational Requirement:** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

**Occupational Outlook:** Physician and surgeon employment is expected to grow much faster than average for all occupations. Job opportunities should be very good, particularly in rural and low-income areas.

Employment of physicians and surgeons is projected to grow 22 percent from 2008 to 2018, much faster than the average for all occupations. Job growth will occur because of continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on perceived new demand for physicians.

Despite growing demand for physicians and surgeons, some factors will temper growth. For example, new technologies allow physicians to be more productive. This means physicians can diagnose and treat more patients in the same amount of time. The rising cost of healthcare can dramatically affect demand for physicians' services. Physician assistants and nurse practitioners, who can perform many of the routine duties of physicians at a fraction of the cost, may be increasingly used. Furthermore, demand for physicians' services is highly sensitive to changes in healthcare reimbursement policies. If changes to health coverage result in higher out-of-pocket costs for consumers, they may demand fewer physician services.

## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1061	Anesthesiologists	179	201	22	12.3%	2	3	5

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$55.58	\$90.80	\$79.06	94.99

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s1</sup>
	2008	2018		
Physicians and Surgeons	661,400	805,500	+22%	26,050

<sup>1</sup> Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

There are two physician educational programs in Maine: the new Maine Medical Center-Tufts University School of Medicine (MMC-TUSM) medical school program and the University of New England's (UNE) College of Osteopathic Medicine.

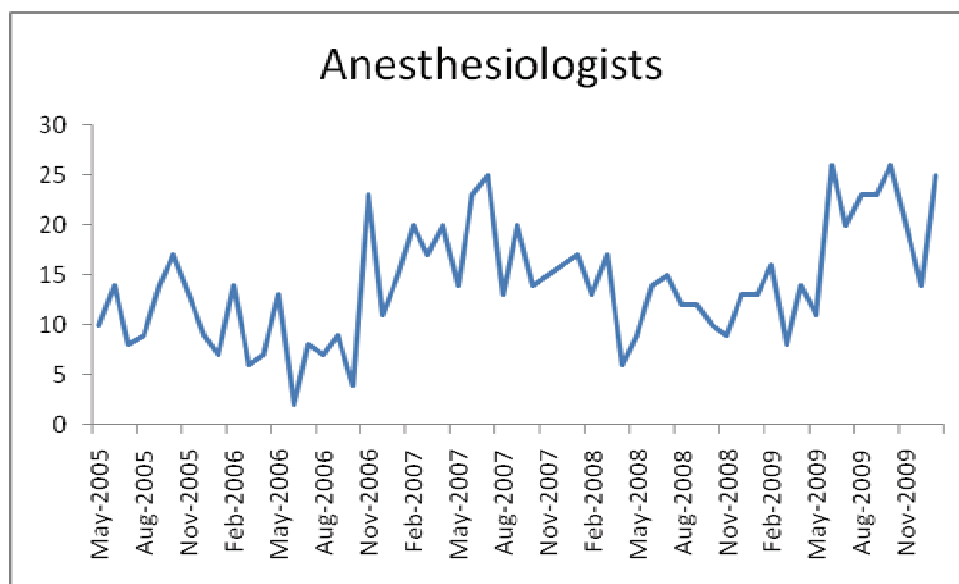
The MMC-TUSM medical school program is a partnership between Maine Medical Center (MMC) and the Tufts University School of Medicine. The program, which offers a unique curriculum that emphasizes rural and small town practice, will grant doctor of medicine degrees (M.D.). Students will also have the option to pursue dual degrees, such as MD/MBA, MD/PHD and MD/MPH. Students spend the first two years at Tufts and year three and portions of year four at MMC. 20 of the 36 undergraduate openings each year are reserved for Mainers at subsidized rates. Scholarships will effectively lower the tuition to the equivalent of an in-state public university medical school program. First graduates are expected in 2013.

The UNE College of Osteopathy has nearly 500 students and grants the Doctor of Osteopathy medicine (D.O.) degree. According to the university website, about two thirds or recent graduates have pursued careers in primary care.



## Help Wanted Online Job Advertisement Trend

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## 29-1062.00 - Family and General Practitioners

**Occupation Description:** Diagnose, treat, and help prevent diseases and injuries that commonly occur in the general population.

**Sample of reported job titles:** Physician, Family Practice Physician, Medical Doctor (MD), Family Physician, Family Practitioner, Medical Staff Physician, Board Certified Family Physician, Family Medicine Physician, Family Practice Medical Doctor (FP MD), Occupational Medicine Physician

**Educational Requirement:** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

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Employment of physicians and surgeons is projected to grow 22 percent from 2008 to 2018, much faster than the average for all occupations. Job growth will occur because of continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on perceived new demand for physicians.

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## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1062	Family and General Practitioners	781	838	57	7.3%	6	14	20

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$46.18	\$86.16	\$72.84	\$77.64

## National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Physicians and Surgeons	661,400	805,500	+22%	26,050

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## Schools and Program Completers by Degree

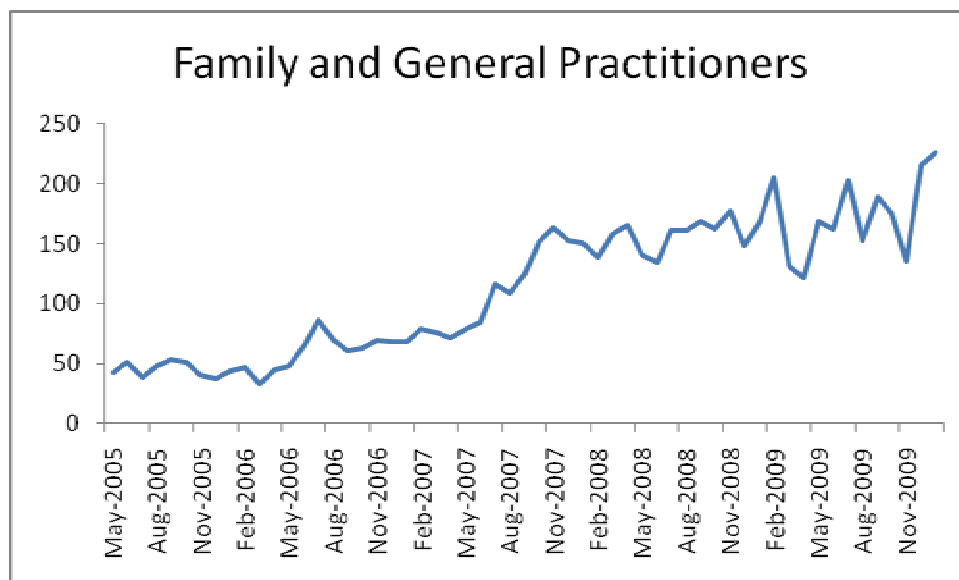
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## 29-1063.00 - Internists, General

**Occupation Description:** Diagnose and provide non-surgical treatment of diseases and injuries of internal organ systems. Provide care mainly for adults who have a wide range of problems associated with the internal organs.

**Sample of reported job titles:** Physician, Internist, Internal Medicine Physician, Medical Doctor (MD), General Internist, Attending Physician, Gastroenterologist, Clinic MD Associate (Clinic Medical Doctor Associate), Internal Medicine Doctor, Pulmonary Physician

**Educational Requirement:** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

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## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1063	Internists, General	499	527	28	5.6%	3	9	12

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$52.54	\$83.39	\$73.11	\$84.97

## National Employment

	Employment		Percent Change	Annual Job Opening <sup>s1</sup>
	2008	2018		
United States				
Physicians and Surgeons	661,400	805,500	+22%	26,050

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## Schools and Program Completers by Degree

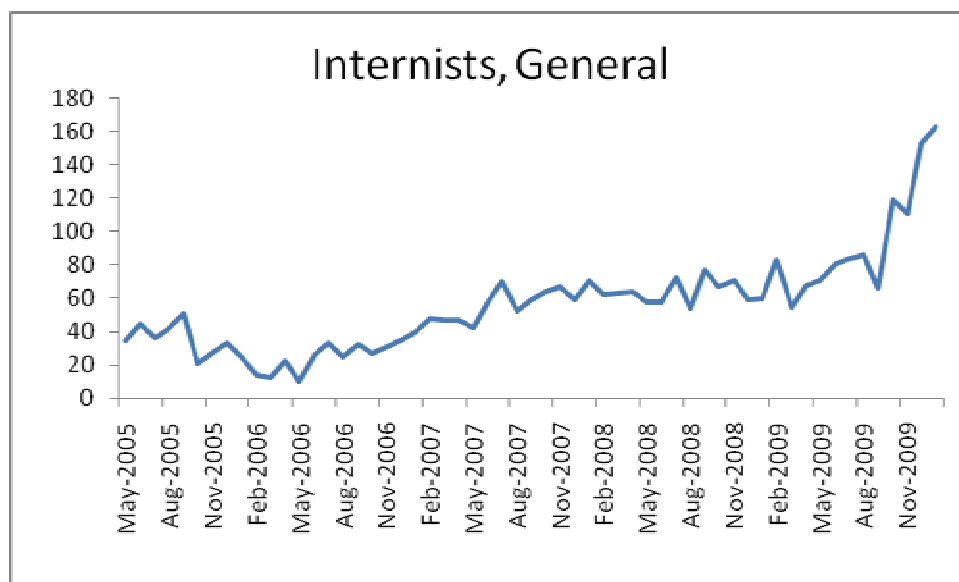
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## 29-1064.00 - Obstetricians and Gynecologists

**Occupation Description:** Diagnose, treat, and help prevent diseases of women, especially those affecting the reproductive system and the process of childbirth.

**Sample of reported job titles:** Physician, Obstetrician/Gynecologist (OB/GYN), Medical Doctor (MD), OB/GYN Physician (Obstetrics and Gynecology Physician), Gynecologist

**Educational Requirement:** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

**Occupational Outlook:** Physician and surgeon employment is expected to grow much faster than average for all occupations. Job opportunities should be very good, particularly in rural and low-income areas.

Employment of physicians and surgeons is projected to grow 22 percent from 2008 to 2018, much faster than the average for all occupations. Job growth will occur because of continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on perceived new demand for physicians.

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## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1064	Obstetricians and Gynecologists	119	133	14	11.8%	1	2	3

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$77.23	-	\$99.18	\$92.68

## National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Physicians and Surgeons	661,400	805,500	+22%	26,050

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## Schools and Program Completers by Degree

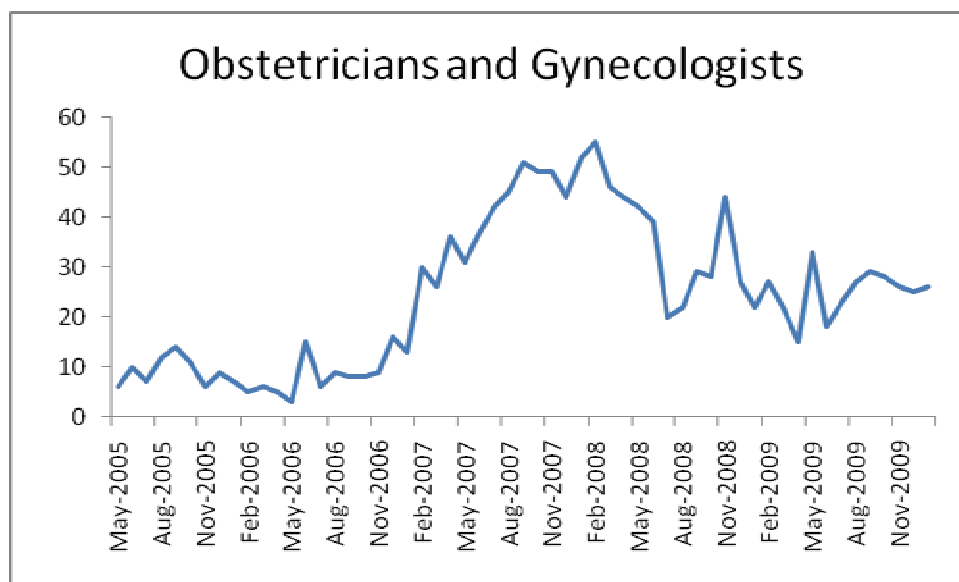
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## Help Wanted Online Job Advertisement Trend

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## 29-1065.00 - Pediatricians, General

**Occupation Description:** Diagnose, treat, and help prevent children's diseases and injuries.

**Sample of reported job titles:** Pediatrician, General Pediatrician, Medical Doctor (MD), Physician, Group Practice Pediatrician, Primary Care Pediatrician

**Educational Requirement:** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

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## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1065	Pediatricians, General	169	181	12	7.1%	1	3	4

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$48.05	\$87.97	\$74.66	\$73.74

## National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
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## Schools and Program Completers by Degree

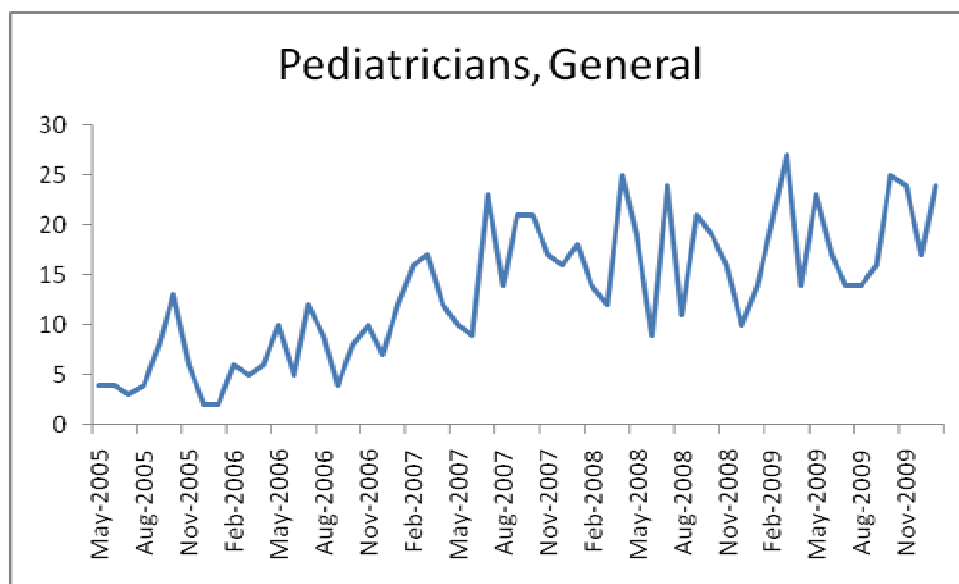
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The UNE College of Osteopathy has nearly 500 students and grants the Doctor of Osteopathy medicine (D.O.) degree. According to the university website, about two thirds of recent graduates have pursued careers in primary care.

## Help Wanted Online Job Advertisement Trend

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## 29-1066.00 - Psychiatrists

**Occupation Description:** Diagnose, treat, and help prevent disorders of the mind.

**Sample of reported job titles:** Psychiatrist, Staff Psychiatrist, Child Psychiatrist, Consulting Psychiatrist, Prison Psychiatrist

**Educational Requirement:** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

**Occupational Outlook:** Physician and surgeon employment is expected to grow much faster than average for all occupations. Job opportunities should be very good, particularly in rural and low-income areas.

Employment of physicians and surgeons is projected to grow 22 percent from 2008 to 2018, much faster than the average for all occupations. Job growth will occur because of continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on perceived new demand for physicians.

Despite growing demand for physicians and surgeons, some factors will temper growth. For example, new technologies allow physicians to be more productive. This means physicians can diagnose and treat more patients in the same amount of time. The rising cost of healthcare can dramatically affect demand for physicians' services. Physician assistants and nurse practitioners, who can perform many of the routine duties of physicians at a fraction of the cost, may be increasingly used. Furthermore, demand for physicians' services is highly sensitive to changes in healthcare reimbursement policies. If changes to health coverage result in higher out-of-pocket costs for consumers, they may demand fewer physician services.

## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1066	Psychiatrists	209	227	18	8.6%	2	4	6

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$64.96	\$90.64	\$82.08	\$74.06

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Physicians and Surgeons	661,400	805,500	+22%	26,050

<sup>1</sup> Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

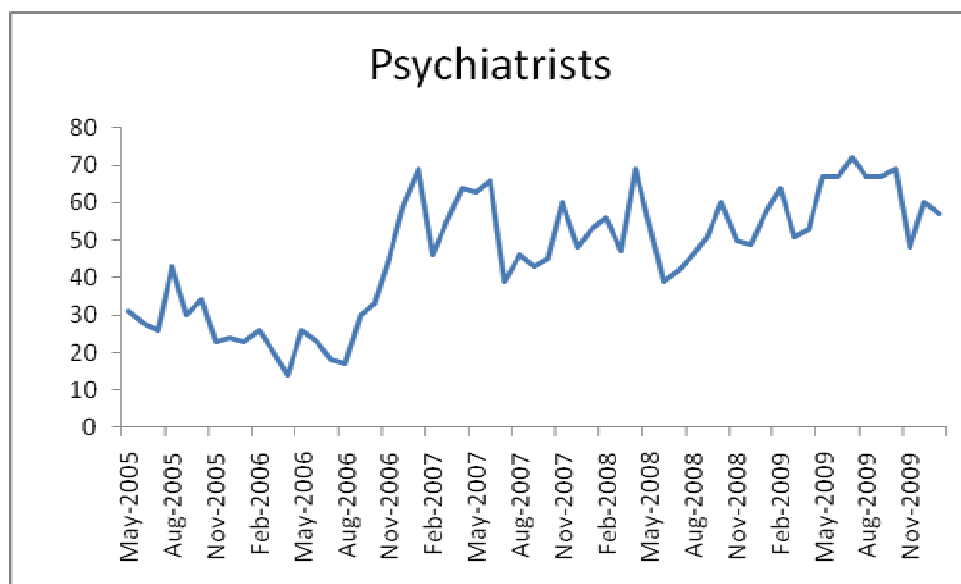
There are two physician educational programs in Maine: the new Maine Medical Center-Tufts University School of Medicine (MMC-TUSM) medical school program and the University of New England's (UNE) College of Osteopathic Medicine.

The MMC-TUSM medical school program is a partnership between Maine Medical Center (MMC) and the Tufts University School of Medicine. The program, which offers a unique curriculum that emphasizes rural and small town practice, will grant doctor of medicine degrees (M.D.). Students will also have the option to pursue dual degrees, such as MD/MBA, MD/PHD and MD/MPH. Students spend the first two years at Tufts and year three and portions of year four at MMC. 20 of the 36 undergraduate openings each year are reserved for Mainers at subsidized rates. Scholarships will effectively lower the tuition to the equivalent of an in-state public university medical school program. First graduates are expected in 2013.

The UNE College of Osteopathy has nearly 500 students and grants the Doctor of Osteopathy medicine (D.O.) degree. According to the university website, about two thirds or recent graduates have pursued careers in primary care.

## Help Wanted Online Job Advertisement Trend

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## 29-1067.00 - Surgeons

**Occupation Description:** Treat diseases, injuries, and deformities by invasive methods, such as manual manipulation or by using instruments and appliances.

**Sample of reported job titles:** General Surgeon, Surgeon, Physician, Medical Doctor (MD), Plastic Surgeon, Vascular Surgeon, Hand Surgeon, Orthopedic Surgeon, Orthopaedic Surgeon, Cardiovascular Surgeon

**Educational Requirement:** First Professional Degree. Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

**Occupational Outlook:** Physician and surgeon employment is expected to grow much faster than average for all occupations. Job opportunities should be very good, particularly in rural and low-income areas.

Employment of physicians and surgeons is projected to grow 22 percent from 2008 to 2018, much faster than the average for all occupations. Job growth will occur because of continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on perceived new demand for physicians.

Despite growing demand for physicians and surgeons, some factors will temper growth. For example, new technologies allow physicians to be more productive. This means physicians can diagnose and treat more patients in the same amount of time. The rising cost of healthcare can dramatically affect demand for physicians' services. Physician assistants and nurse practitioners, who can perform many of the routine duties of physicians at a fraction of the cost, may be increasingly used. Furthermore, demand for physicians' services is highly sensitive to changes in healthcare reimbursement policies. If changes to health coverage result in higher out-of-pocket costs for consumers, they may demand fewer physician services.

## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1067	Surgeons	516	543	27	5.2%	3	9	12

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
-	-	-	\$99.41

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s1</sup>
	2008	2018		
Physicians and Surgeons	661,400	805,500	+22%	26,050

<sup>1</sup> Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

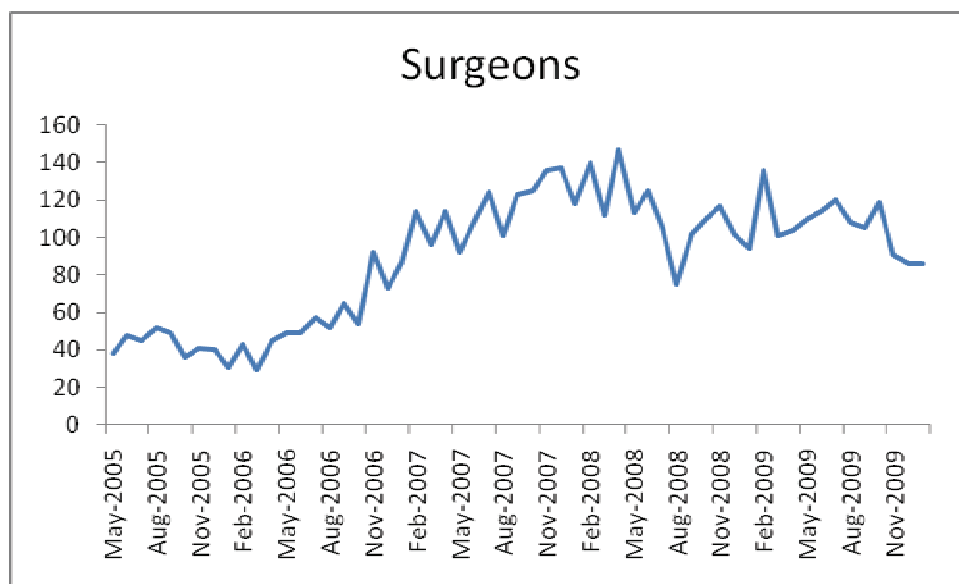
There are two physician educational programs in Maine: the new Maine Medical Center-Tufts University School of Medicine (MMC-TUSM) medical school program and the University of New England's (UNE) College of Osteopathic Medicine.

The MMC-TUSM medical school program is a partnership between Maine Medical Center (MMC) and the Tufts University School of Medicine. The program, which offers a unique curriculum that emphasizes rural and small town practice, will grant doctor of medicine degrees (M.D.). Students will also have the option to pursue dual degrees, such as MD/MBA, MD/PHD and MD/MPH. Students spend the first two years at Tufts and year three and portions of year four at MMC. 20 of the 36 undergraduate openings each year are reserved for Mainers at subsidized rates. Scholarships will effectively lower the tuition to the equivalent of an in-state public university medical school program. First graduates are expected in 2013.

The UNE College of Osteopathy has nearly 500 students and grants the Doctor of Osteopathy medicine (D.O.) degree. According to the university website, about two thirds or recent graduates have pursued careers in primary care.

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## 29-1069.00 - Physicians and Surgeons, All Other

**Occupation Description:** All physicians and surgeons not listed separately.

**Sample of reported job titles:** Allergists and Immunologists, Dermatologists, Hospitalists, Neurologists, Nuclear Medicine Physicians, Ophthalmologists, Pathologists, Physical Medicine and Rehabilitation Physicians, Preventive Medicine Physicians, Radiologists, Sports Medicine Physicians, Urologists

**Educational Requirement:** First Professional Degree. Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 or 7 years rather than the customary 8 years.... The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. In 2008, there were 129 medical schools accredited by the Liaison Committee on Medical Education (LCME). The LCME is the national accrediting body for M.D. medical education programs. The American Osteopathic Association accredits schools that award a D.O. degree; there were 25 schools accredited in 31 locations in 2008.

**Occupational Outlook:** Physician and surgeon employment is expected to grow much faster than average for all occupations. Job opportunities should be very good, particularly in rural and low-income areas.

Employment of physicians and surgeons is projected to grow 22 percent from 2008 to 2018, much faster than the average for all occupations. Job growth will occur because of continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on perceived new demand for physicians.

Despite growing demand for physicians and surgeons, some factors will temper growth. For example, new technologies allow physicians to be more productive. This means physicians can diagnose and treat more patients in the same amount of time. The rising cost of healthcare can dramatically affect demand for physicians' services. Physician assistants and nurse practitioners, who can perform many of the routine duties of physicians at a fraction of the cost, may be increasingly used. Furthermore, demand for physicians' services is highly sensitive to changes in healthcare reimbursement policies. If changes to health coverage result in higher out-of-pocket costs for consumers, they may demand fewer physician services.

## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1069	Physicians and Surgeons, All Other	1435	1600	165	11.5%	17	26	43

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$34.90	\$100.02	\$78.31	\$79.33

## National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Physicians and Surgeons, All Other	661,400	805,500	+22%	26,050

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

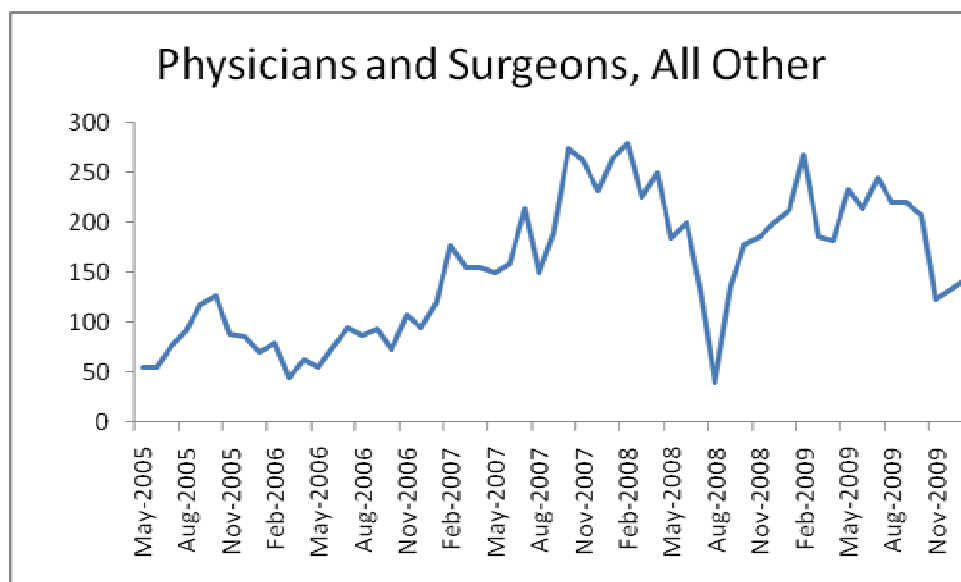
There are two physician educational programs in Maine: the new Maine Medical Center-Tufts University School of Medicine (MMC-TUSM) medical school program and the University of New England's (UNE) College of Osteopathic Medicine.

The MMC-TUSM medical school program is a partnership between Maine Medical Center (MMC) and the Tufts University School of Medicine. The program, which offers a unique curriculum that emphasizes rural and small town practice, will grant doctor of medicine degrees (M.D.). Students will also have the option to pursue dual degrees, such as MD/MBA, MD/PHD and MD/MPH. Students spend the first two years at Tufts and year three and portions of year four at MMC. 20 of the 36 undergraduate openings each year are reserved for Mainers at subsidized rates. Scholarships will effectively lower the tuition to the equivalent of an in-state public university medical school program. First graduates are expected in 2013.

The UNE College of Osteopathy has nearly 500 students and grants the Doctor of Osteopathy medicine (D.O.) degree. According to the university website, about two thirds or recent graduates have pursued careers in primary care.

## Help Wanted Online Job Advertisement Trend

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## 29-1071.00 - Physician Assistants

**Occupation Description:** Provide healthcare services typically performed by a physician, under the supervision of a physician. Conduct complete physicals, provide treatment, and counsel patients. May, in some cases, prescribe medication. Must graduate from an accredited educational program for physician assistants.

**Sample of reported job titles:** Physician Assistant (PA), Physician Assistant Certified (PAC), Physician's Assistant, Family Practice Physician Assistant, Midlevel Provider, Neurosurgical Physician Assistant, Orthopaedic Physician Assistant, Cardiology Physician Assistant, Cardiothoracic Surgery Physician Assistant, Cardiovascular Physician Assistant

**Educational Requirement:** Master's Degree. Physician assistant education programs usually last at least 2 years and are full time. Most programs are in schools of allied health, academic health centers, medical schools, or 4-year colleges; a few are in community colleges, the military, or hospitals. Many accredited PA programs have clinical teaching affiliations with medical schools. In 2007, 136 education programs for physician assistants were accredited or provisionally accredited by the American Academy of Physician Assistants. More than 90 of these programs offered the option of a master's degree, and the rest offered either a bachelor's degree or an associate degree. Most applicants to PA educational programs already have a bachelor's degree. Admission requirements vary, but many programs require 2 years of college and some work experience in the health care field.

**Occupational Outlook:** Employment of physician assistants is expected to grow 27 percent from 2006 to 2016, much faster than the average for all occupations. Projected rapid job growth reflects the expansion of health care industries and an emphasis on cost containment, which results in increasing use of PAs by health care establishments.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1071	Physician Assistants	594	728	134	22.6%	13	8	21

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$33.39	\$44.42	\$40.74	\$39.24

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s</sup> <sub>1</sub>
	2008	2018		
Physician Assistants	74,800	103,900	+39%	4,280

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

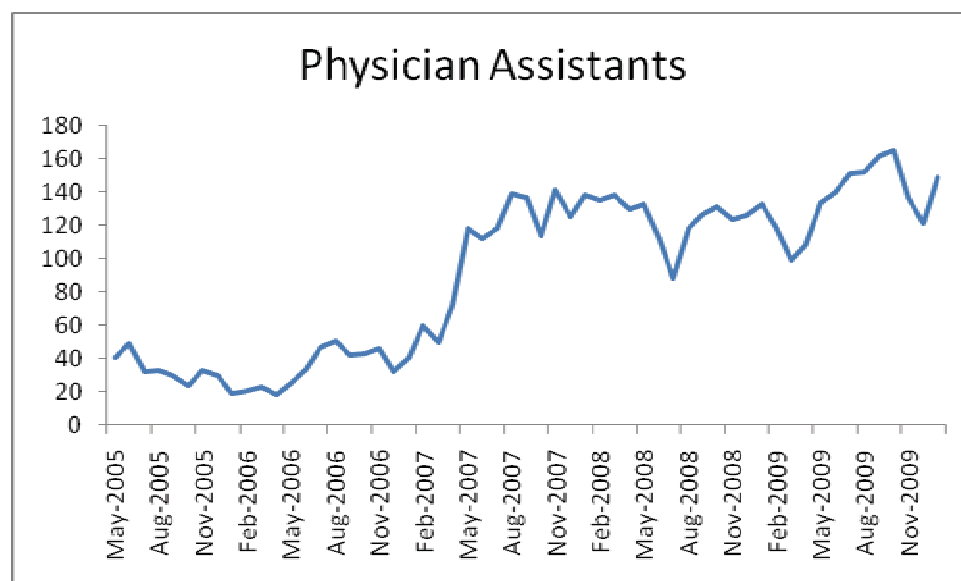
## Schools and Program Completers by Degree

Program of Study and Training: 51.0912 Physician Assistant																		
1	Market Share			Completers														
				2003-04			2004-05			2005-06			2006-07			2007-08		
	School			M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
	Master's degree																	
	University of New England			16	27	43	11	30	41	14	33	47	13	25	38	11	34	45
Program Completer Total			16	27	43	11	30	41	14	33	47	13	25	38	11	34	45	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																		
AMA Number of Programs			1			1			1			1						
AMA Number of Completers			31			43			43			43						

Source: AMA

## Help Wanted Online Job Advertisement Trend

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## 29-1122.00 - Occupational Therapists

**Occupation Description:** Assess, plan, organize, and participate in rehabilitative programs that help restore vocational, homemaking, and daily living skills, as well as general independence, to disabled persons.

**Sample of reported job titles:** Occupational Therapist (OT), Registered Occupational Therapist, Staff Therapist, Assistive Technology Trainer, Industrial Rehabilitation Consultant

**Educational Requirement:** Master's Degree. A master's degree or higher in occupational therapy is the minimum requirement for entry into the field. In 2007, 124 master's degree programs offered entry-level education, 66 programs offered a combined bachelor's and master's degree, and 5 offered an entry-level doctoral degree. Most schools have full-time programs, although a growing number are offering weekend or part-time programs as well. Coursework in occupational therapy programs include the physical, biological, and behavioral sciences as well as the application of occupational therapy theory and skills. Programs also require the completion of 6 months of supervised fieldwork.

**Occupational Outlook:** Employment of occupational therapists is expected to increase 23 percent between 2006 and 2016, much faster than the average for all occupations. The increasing elderly population will drive growth in the demand for occupational therapy services. In the short run, the impact of proposed Federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for occupational therapists. However, over the long run, the demand for occupational therapists should continue to rise as a result of the increasing number of individuals with disabilities or limited function who require therapy services. The baby-boom generation's movement into middle age, a period when the incidence of heart attack and stroke increases, will spur demand for therapeutic services. Growth in the population 75 years and older—an age group that suffers from high incidences of disabling conditions—also will increase demand for therapeutic services. In addition, medical advances now enable more patients with critical problems to survive—patients who ultimately may need extensive therapy.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1122	Occupational Therapists	680	766	86	12.6%	9	10	19

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$17.34	\$30.57	\$26.16	\$32.65

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Occupational Therapists	104,500	131,300	+26%	4,580

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

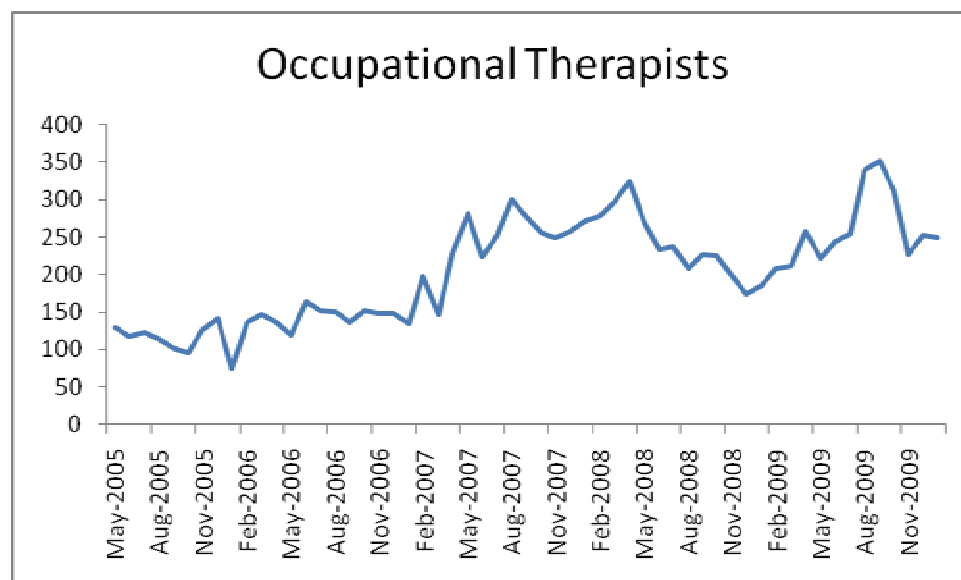
## Schools and Program Completers by Degree

Program of Study and Training: 51.2306 Occupational Therapy/Therapist																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
<b>Bachelor's degree</b>																
1	Husson University	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Master's degree</b>																
1	Husson University	0	0	0	1	11	12	1	3	4	0	6	6	0	12	12
2	University of New England	3	24	27	2	22	24	1	26	27	0	12	12	1	22	23
3	University of Southern Maine	0	10	10	1	8	9	1	11	12	1	8	9	0	15	15
<b>Subtotal</b>		<b>3</b>	<b>34</b>	<b>37</b>	<b>4</b>	<b>41</b>	<b>45</b>	<b>3</b>	<b>40</b>	<b>43</b>	<b>1</b>	<b>26</b>	<b>27</b>	<b>1</b>	<b>49</b>	<b>50</b>
<b>Program Completer Total</b>		<b>3</b>	<b>34</b>	<b>37</b>	<b>4</b>	<b>41</b>	<b>45</b>	<b>3</b>	<b>40</b>	<b>43</b>	<b>1</b>	<b>26</b>	<b>27</b>	<b>1</b>	<b>49</b>	<b>50</b>
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs		3			3			3			3					
AMA Number of Completers		28			31			57			56					

Source: AMA

## Help Wanted Online Job Advertisement Trend

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## 31-2011.00 - Occupational Therapist Assistants

**Occupation Description:** Assist occupational therapists in providing occupational therapy treatments and procedures. May, in accordance with State laws, assist in development of treatment plans, carry out routine functions, direct activity programs, and document the progress of treatments. Generally requires formal training.

**Sample of reported job titles:** Certified Occupational Therapy Assistant (COTA), Certified Occupational Therapy Assistant-Licensed (COTA-L), Occupational Therapy Assistant, Occupational Therapist Assistant, Certified Occupational Therapist Assistant (COTA), Behavior Specialist, Licensed Occupational Therapy Assistant

**Educational Requirement:** Associate's Degree. An associate degree or certificate from an accredited community college or technical school is generally required to qualify for occupational therapist assistant jobs. In contrast, occupational therapist aides usually receive most of their training on the job.

**Occupational Outlook:** Employment of occupational therapist assistants and aides is expected to grow 25 percent from 2006 to 2016, much faster than the average for all occupations. In the short run, the impact of proposed Federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for occupational therapist assistants and aides. Over the long run, however, demand for occupational therapist assistants and aides will continue to rise because of the increasing number of individuals with disabilities or limited function.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-2011	Occupational Therapist Assistants	155	180	25	16.1%	3	2	5

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$8.99	\$19.26	\$15.84	\$23.29

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s1</sup>
	2008	2018		
Occupational Therapist Assistants	26,600	34,600	+30%	1,180

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

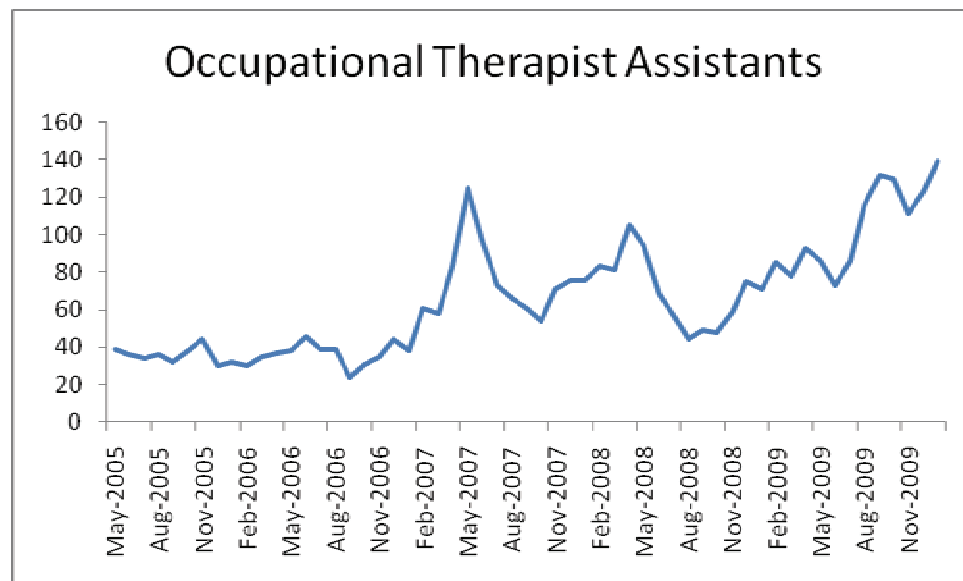
## Schools and Program Completers by Degree

Program of Study and Training: 51.0803 Occupational Therapist Assistant																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
<b>Associate's degree</b>																
1	Kennebec Valley Community College	0	6	6	1	11	12	2	10	12	3	12	15	1	15	16
<b>Program Completer Total</b>			6	6	1	11	12	2	10	12	3	12	15	1	15	16
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs		1			1			1			1					
AMA Number of Completers		11			11			11			0					

Source: AMA

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1123.00 - Physical Therapists

**Occupation Description:** Assess, plan, organize, and participate in rehabilitative programs that improve mobility, relieve pain, increase strength, and decrease or prevent deformity of patients suffering from disease or injury.

**Sample of reported job titles:** Physical Therapist (PT), Staff Physical Therapist, Home Care Physical Therapist, Outpatient Physical Therapist, Pediatric Physical Therapist, Registered Physical Therapist (RPT), Rehabilitation Services Director

**Educational Requirement:** Master's Degree. Physical therapists need a master's degree from an accredited physical therapy program and a State license, requiring passing scores on national and State examinations. According to the American Physical Therapy Association, there were 209 accredited physical therapist education programs in 2007. Of the accredited programs, 43 offered master's degrees and 166 offered doctoral degrees. Only master's degree and doctoral degree programs are accredited, in accordance with the Commission on Accreditation in Physical Therapy Education. In the future, a doctoral degree might be the required entry-level degree. Master's degree programs typically last 2 years, and doctoral degree programs last 3 years.

**Occupational Outlook:** Employment of physical therapists is expected to grow 27 percent from 2006 to 2016, much faster than the average for all occupations. The impact of proposed Federal legislation imposing limits on reimbursement for therapy services may adversely affect the short-term job outlook for physical therapists. However, the long-run demand for physical therapists should continue to rise as new treatments and techniques expand the scope of physical therapy practices. Moreover, demand will be spurred by the increasing numbers of individuals with disabilities or limited function.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1123	Physical Therapists	985	1215	230	23.4%	23	12	35

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$25.17	\$34.14	\$31.15	\$35.77

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Physical Therapists	185,500	241,700	+30%	7,860

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

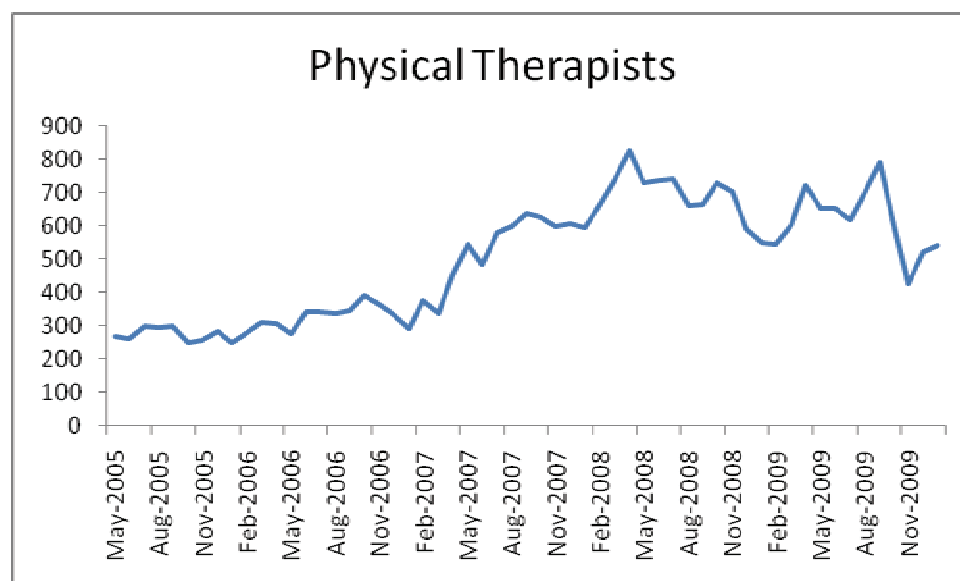
## Schools and Program Completers by Degree

Program of Study and Training: 51.2308 Physical Therapy/Therapist																
➡	Market Share		Completers													
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Master's degree																
1	Husson University	5	11	16	5	11	16	10	17	27	4	13	17	6	16	22
2	University of New England	6	28	34	5	25	30	1	4	5	4	3	7	9	14	23
	Subtotal	11	39	50	10	36	46	11	21	32	8	16	24	15	30	45
Doctor's degree																
1	Husson University	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Program Completer Total	11	39	50	10	36	46	11	21	32	8	16	24	15	30	45
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA programs				2		1		2		2						
AMA completers				0		28		34		0						

Source: AMA

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-2021.00 - Physical Therapist Assistants

**Occupation Description:** Assist physical therapists in providing physical therapy treatments and procedures. May, in accordance with State laws, assist in the development of treatment plans, carry out routine functions, document the progress of treatment, and modify specific treatments in accordance with patient status and within the scope of treatment plans established by a physical therapist. Generally requires formal training.

**Sample of reported job titles:** Physical Therapist Assistant (PTA), Physical Therapy Assistant (PTA), Physical Therapy Technician, Licensed Physical Therapist Assistant (LPTA), Licensed Physical Therapy Assistant (LPTA), Physical Therapy Technician

**Educational Requirement:** Associate's Degree. Employers typically require physical therapist aides to have a high school diploma. They are trained on the job, and most employers provide clinical on-the-job training. In many States, physical therapist assistants are required by law to hold at least an associate degree. According to the American Physical Therapy Association, there were 233 accredited physical therapist assistant programs in the United States as of 2006. Accredited programs usually last 2 years, or 4 semesters, and culminate in an associate degree.

**Occupational Outlook:** Employment of physical therapist assistants and aides is expected to grow by 29 percent over the 2006-16 decade, much faster than the average for all occupations. The impact of Federal limits on Medicare and Medicaid reimbursement for therapy services may adversely affect the short-term job outlook for physical therapist assistants and aides. However, long-term demand for physical therapist assistants and aides will continue to rise, as the number of individuals with disabilities or limited function grows.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-2021	Physical Therapist Assistant	196	260	64	32.7%	6	3	9

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$16.86	\$21.33	\$19.84	\$22.26

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Physical Therapist Assistants	63,800	85,100	+33%	3,050

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

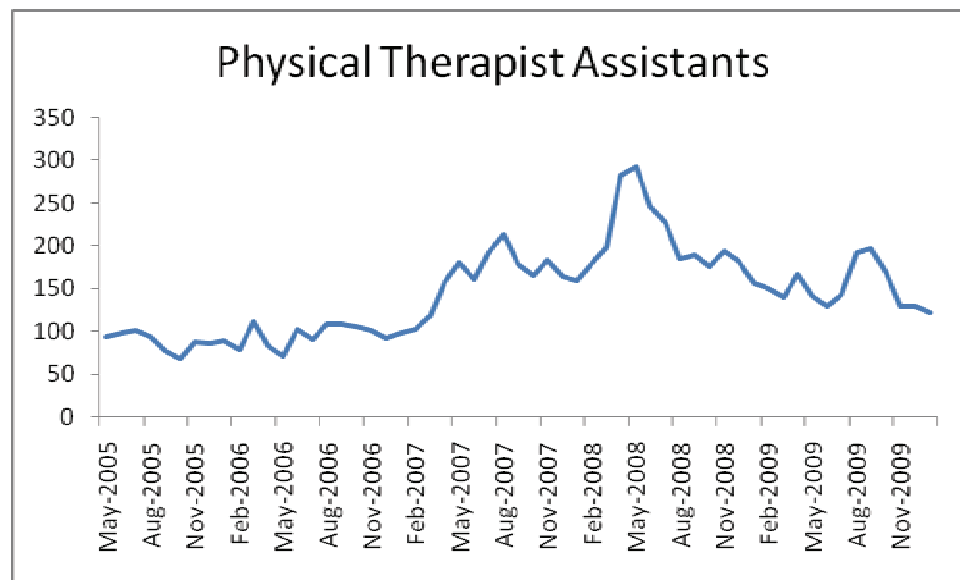
## Schools and Program Completers by Degree

Program of Study and Training: 51.0806 Physical Therapist Assistant																	
➡	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																	
1	Kennebec Valley Community College		0	3	3	3	1	4	0	5	5	1	4	5	2	2	4
	Program Completer Total			3	3	3	1	4		5	5	1	4	5	2	2	4
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
AMA Number of Programs					1			1			1			1			
AMA Number of Completers					3			5			5			0			

Source: AMA

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## 31-2022.00 - Physical Therapist Aides

**Occupational Description:** Under close supervision of a physical therapist or physical therapy assistant, perform only delegated, selected, or routine tasks in specific situations. These duties include preparing the patient and the treatment area.

**Sample of reported job titles:** Physical Therapy Aide (PTA), Physical Therapy Aide (PT Aide), Physical Therapy Technician, Rehabilitation Aide, Physical Therapist Aide (PTA), Physical Therapist Technician, Rehabilitation Technician, Restorative Aide (RA), Clinical Rehabilitation Aide, Physical Therapy Attendant

**Educational Requirement:** Short-term on-the-job Training. Employers typically require physical therapist aides to have a high school diploma. They are trained on the job, and most employers provide clinical on-the-job training. In many States, physical therapist assistants are required by law to hold at least an associate degree. According to the American Physical Therapy Association, there were 233 accredited physical therapist assistant programs in the United States as of 2006. Accredited programs usually last 2 years, or 4 semesters, and culminate in an associate degree.

**Occupational Outlook:** Employment of physical therapist assistants and aides is expected to grow by 29 percent over the 2006-16 decade, much faster than the average for all occupations. The impact of Federal limits on Medicare and Medicaid reimbursement for therapy services may adversely affect the short-term job outlook for physical therapist assistants and aides. However, long-term demand for physical therapist assistants and aides will continue to rise, as the number of individuals with disabilities or limited function grows.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-2022	Physical Therapist Aides	152	184	32	21.8%	3	2	5

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$9.08	\$12.83	\$11.58	\$11.91

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Physical Therapist Aides	46,100	62,800	+36%	2,340

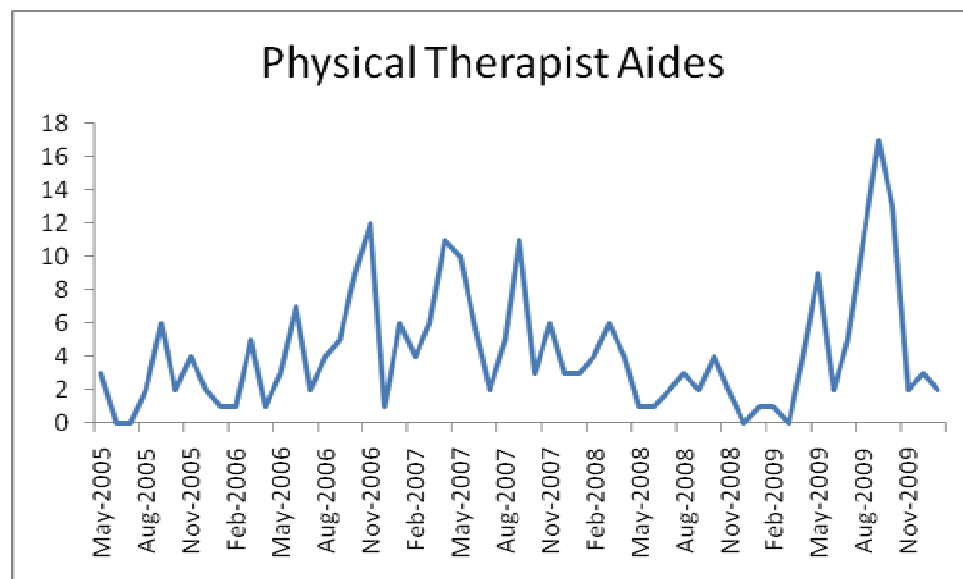
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Physical therapist aides require short-term-on-the-job training.

## Help Wanted Online Job Advertisement Trend

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## 29-1124.00 - Radiation Therapists

**Occupation Description:** Provide radiation therapy to patients as prescribed by a radiologist according to established practices and standards. Duties may include reviewing prescription and diagnosis; acting as liaison with physician and supportive care personnel; preparing equipment, such as immobilization, treatment, and protection devices; and maintaining records, reports, and files. May assist in dosimetry procedures and tumor localization.

**Sample of reported job titles:** Radiation Therapist, Staff Radiation Therapist, Radiation Therapy Technologist (RTT), Registered Radiation Therapist, Computed Tomography Simulation Therapist (CT Simulation Therapist)

**Educational Requirement:** Associate's Degree. Employers generally require applicants to complete an associate or a bachelor's degree program in radiation therapy. Individuals also may become qualified by completing an associate or a bachelor's degree program in radiography, which is the study of radiological imaging, and then completing a 12-month certificate program in radiation therapy. Some States require that radiation therapists be licensed by a State accrediting board. Some States, as well as many employers, also require that radiation therapists be certified by the American Registry of Radiologic Technologists (ARRT). In order to become AART-certified, an applicant needs to complete an accredited radiation therapy program, adhere to AART ethical standards, and pass the AART certification examination. In 2005 there were 94 accredited radiation therapy programs.

**Occupational Outlook:** Employment of radiation therapists is projected to grow by 27 percent between 2008 and 2018, which is much faster than the average for all occupations. The growing elderly population is expected to cause an increase in the number of people needing treatment. In addition, as radiation technology becomes safer and more effective, it will be prescribed more often, leading to an increased demand for radiation therapists. Growth is likely to be rapid across all practice settings, including hospitals, physicians' offices, and outpatient centers.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1124	Radiation Therapists	107	135	28	26.2%	3	2	5

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$22.60	\$33.88	\$30.12	\$36.28

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Radiation Therapists	15,200	19,400	+27%	690

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

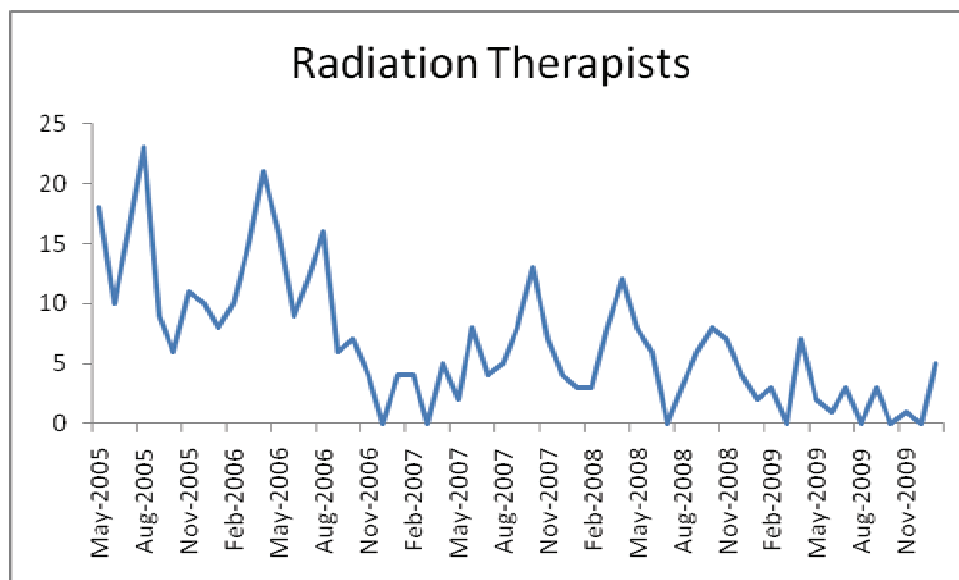
## Schools and Program Completers by Degree

Although OSDS reports a number of programs in Maine for radiation therapy, there are only two programs in Maine offering a major in this area: Southern Maine Community College and the University of Southern Maine (USM). USM offers a bachelor of science in radiation therapy but requires students to transfer in with an associate's degree. The Eastern Maine Community College program is for medical radiography—this program should be classified under “Radiography” instead of radiation therapy. Saint Joseph's College no longer offers programs in radiation therapy or radiography. Central Maine Community College terminated their two year radiologic technology program; students were accepted for the last time in the fall of 2009.

Program of Study and Training: 51.0907 Medical Radiologic Technology/Science - Radiation Therapist																	
	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																	
1	Central Maine Community College		0	6	6	4	5	9	2	6	8	3	8	11	5	6	11
2	Eastern Maine Community College		2	8	10	5	8	13	8	11	19	6	6	12	6	10	16
3	Saint Joseph's College of Maine		1	5	6	0	6	6	0	0	0	0	0	0	0	0	0
4	Southern Maine Community College		0	4	4	0	4	4	1	4	5	0	0	0	3	7	10
	Subtotal		3	23	26	9	23	32	11	21	32	9	14	23	14	23	37
Bachelor's degree																	
1	Saint Joseph's College of Maine		1	6	7	0	6	6	2	10	12	1	9	10	1	2	3
	Program Completer Total		4	29	33	9	29	38	13	31	44	10	23	33	15	25	40
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
AMA Number of Programs					1			1			1			1			
AMA Number of Completers					4			5			5			10			
Source: AMA																	

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## 29-2034.00 - Radiologic Technologists and Technicians

**Occupation Description:** Take X-rays and CAT scans or administer nonradioactive materials into patient's blood stream for diagnostic purposes. Includes technologists who specialize in other modalities, such as computed tomography and magnetic resonance. Includes workers whose primary duties are to demonstrate portions of the human body on X-ray film or fluoroscopic screen.

**Educational Requirement:** Associate's Degree. Formal training programs in radiography range in length from 1 to 4 years and lead to a certificate, associate degree, or bachelor's degree. Two-year associate degree programs are most prevalent. Some 1-year certificate programs are available for experienced radiographers or individuals from other health occupations, such as medical technologists and registered nurses, who want to change fields or specialize in CT or MRI. A bachelor's or master's degree in one of the radiologic technologies is desirable for supervisory, administrative, or teaching positions.

**Occupational Outlook:** Employment is projected to grow faster than average. Those with knowledge of more than one diagnostic imaging procedure—such as CT, MR, and mammography—will have the best employment opportunities.

Employment of radiologic technologists is expected to increase by about 17 percent from 2008 to 2018, faster than the average for all occupations. As the population grows and ages, there will be an increasing demand for diagnostic imaging. With age comes increased incidence of illness and injury, which often requires diagnostic imaging for diagnosis. In addition to diagnosis, diagnostic imaging is used to monitor the progress of disease treatment. With the increasing success of medical technologies in treating disease, diagnostic imaging will increasingly be needed to monitor progress of treatment.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2034	Radiologic Technologist	1106	1327	221	20.0%	22	15	37

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$21.07	\$29.88	\$26.94	\$25.59

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Radiologic Technologists	214,700	251,700	+17%	6,800

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

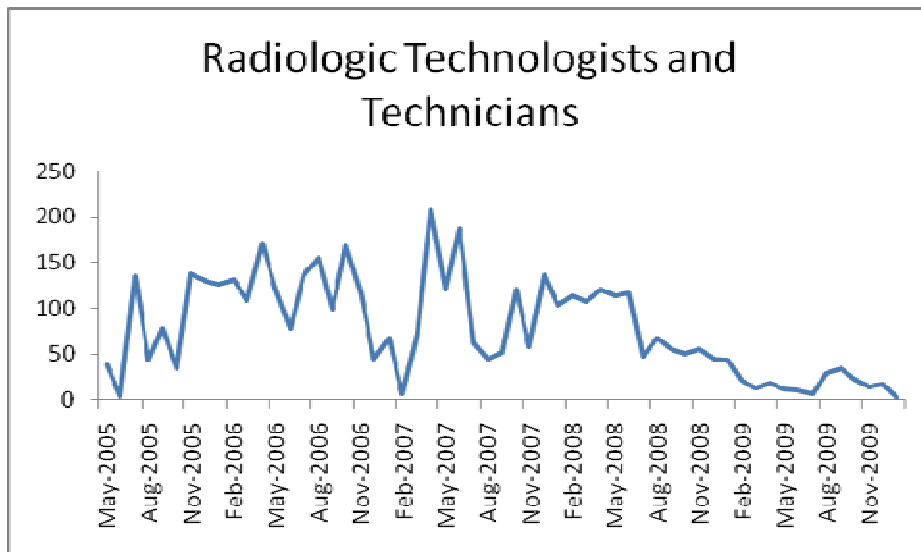
## Schools and Program Completers by Degree

In addition to the schools identified below, Eastern Maine Community College (EMCC) offers a medical radiography program. In OSDS the EMCC program is found under “Medical Radiologic Technology/Science- Radiation Therapists.” According to the Joint Review Committee on Education in Radiologic Technology (JRCERT) there are five programs in Maine presently with accreditation in this area: the EMCC program plus the four programs listed in the chart below.

Program of Study and Training: 51.0911 Radiologic Technology/Science - Radiographer																			
Market Share		Completers																	
		2003-04			2004-05			2005-06			2006-07			2007-08					
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total			
Associate's degree																			
1	Kennebec Valley Community College	0	0	0	0	0	0	3	14	17	6	15	21	6	14	20			
2	Southern Maine Community College	0	0	0	6	15	21	5	12	17	6	13	19	4	12	16			
	Subtotal				6	15	21	8	26	34	12	28	40	10	26	36			
Award at least 2 but less than 4 academic year																			
1	Central Maine Medical Center School of Radiologic Technology	0	6	6	4	4	8	2	7	9	3	8	11	4	7	11			
2	Mercy Hospital School of Radiologic Technology	1	8	9	0	8	8	2	8	10	3	6	9	4	3	7			
	Subtotal	1	14	15	4	12	16	4	15	19	6	14	20	8	10	18			
	Program Completer Total	1	14	15	10	27	37	12	41	53	18	42	60	18	36	54			
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																			
AMA Number of Programs				4				4				5				5			
AMA Number of Completers				28				47				58				57			
Source: AMA																			

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## 29-1126.00 - Respiratory Therapists

**Occupation Description:** Assess, treat, and care for patients with breathing disorders. Assume primary responsibility for all respiratory care modalities, including the supervision of respiratory therapy technicians. Initiate and conduct therapeutic procedures; maintain patient records; and select, assemble, check, and operate equipment.

**Sample of reported job titles:** Respiratory Therapist (RT), Registered Respiratory Therapist (RRT), Respiratory Care Practitioner (RCP), Certified Respiratory Therapist (CRT), Clinical Coordinator of Respiratory Therapy, Director of Cardiopulmonary Services, Respiratory Therapy Director, Staff Respiratory Therapist

**Educational Requirement:** Associate's Degree. An associate degree is required to become a respiratory therapist. Training is offered at the postsecondary level by colleges and universities, medical schools, vocational-technical institutes, and the Armed Forces. Most programs award associate or bachelor's degree and prepare graduates for jobs as advanced respiratory therapists. A limited number of associate degree programs lead to jobs as entry-level respiratory therapists.

**Occupational Outlook:** Employment of respiratory therapists is expected to grow 19 percent from 2006 to 2016, faster than the average for all occupations. The increasing demand will come from substantial growth in the middle-aged and elderly population—a development that will heighten the incidence of cardiopulmonary disease. Growth in demand also will result from the expanding role of respiratory therapists in case management, disease prevention, emergency care, and the early detection of pulmonary disorders.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1126	Respiratory Therapists	493	607	114	23.1%	11	7	18

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$21.24	\$27.47	\$25.40	\$25.55

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Respiratory Therapists	105,900	128,100	+21%	4,140

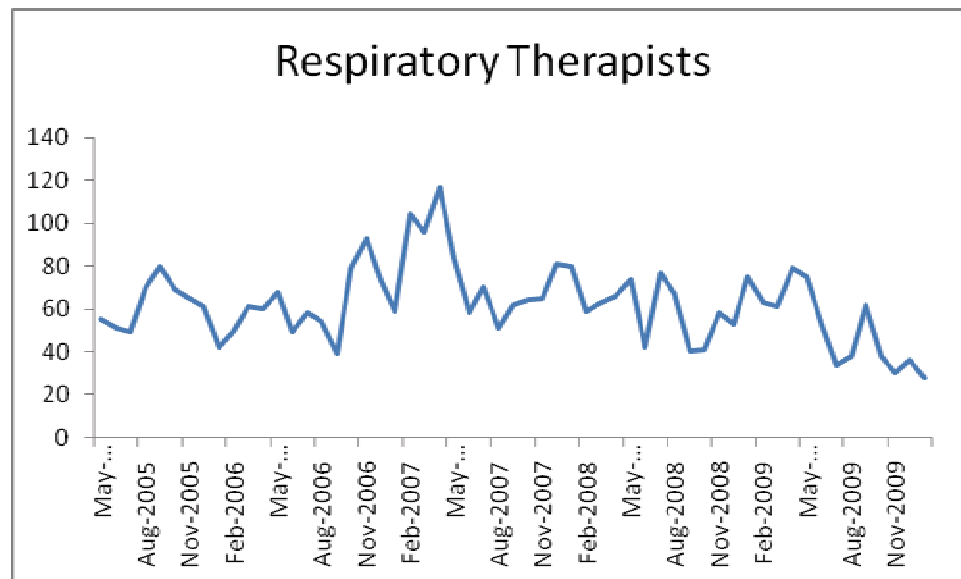
<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0908 Respiratory Care Therapy/Therapist																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																
1	Kennebec Valley Community College	2	9	11	3	8	11	4	4	8	3	6	9	5	5	10
2	Southern Maine Community College	5	9	14	3	7	10	7	8	15	11	7	18	5	7	12
	Subtotal	7	18	25	6	15	21	11	12	23	14	13	27	10	12	22
	Program Completer Total	7	18	25	6	15	21	11	12	23	14	13	27	10	12	22
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs				2			2			2			2			
AMA Number of Completers				23			20			23			24			
Source: AMA																

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## 29-2054.00 - Respiratory Therapy Technicians

**Occupation Description:** Provide specific, well defined respiratory care procedures under the direction of respiratory therapists and physicians.

**Sample of reported job titles:** Respiratory Therapy Technician, Certified Respiratory Therapy Technician (CRTT), Respiratory Technician, Registered Pulmonary Function Technologist

**Educational Requirement:** Associate's Degree. An associate degree is required to become a respiratory therapist. Training is offered at the postsecondary level by colleges and universities, medical schools, vocational-technical institutes, and the Armed Forces. Most programs award associate or bachelor's degree and prepare graduates for jobs as advanced respiratory therapists. A limited number of associate degree programs lead to jobs as entry-level respiratory therapists.

**Occupational Outlook:** Employment of respiratory therapists is expected to grow 19 percent from 2006 to 2016, faster than the average for all occupations. The increasing demand will come from substantial growth in the middle-aged and elderly population—a development that will heighten the incidence of cardiopulmonary disease. Growth in demand also will result from the expanding role of respiratory therapists in case management, disease prevention, emergency care, and the early detection of pulmonary disorders.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2054	Respiratory Therapy Technicians	77	79	2	2.6%	0	2	2

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$16.58	\$24.57	\$21.91	\$21.00

## Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Respiratory Therapy Technicians	16,600	16,400	-1%	420

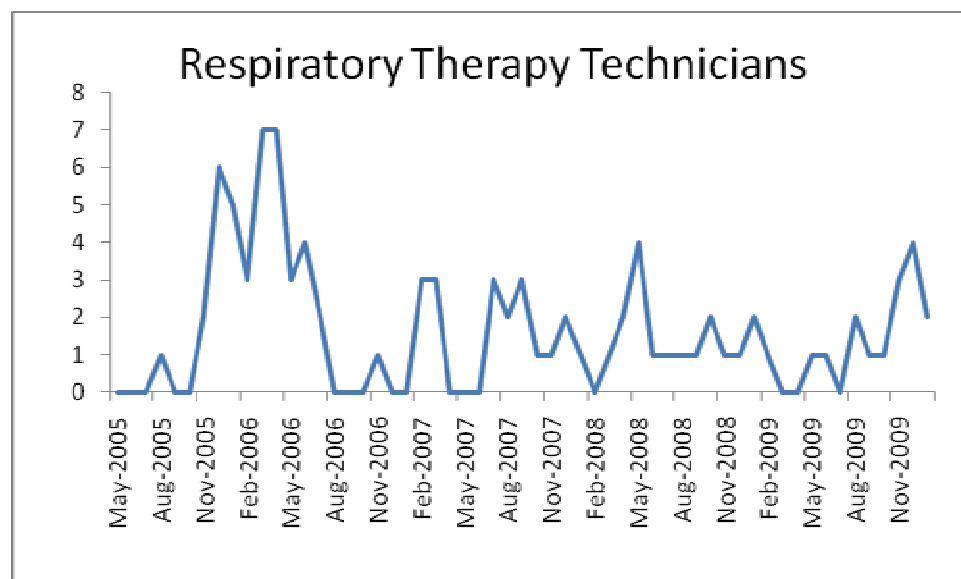
<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

The OSDS reports the same educational program statistics for respiratory therapy technicians as for respiratory therapists (KVCC and SMCC). While these programs may provide instruction for technicians, SMCC notes that their program produces respiratory therapists.

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## 29-1127.00 - Speech-Language Pathologists

**Occupation Description:** Assess and treat persons with speech, language, voice, and fluency disorders. May select alternative communication systems and teach their use. May perform research related to speech and language problems.

**Sample of reported job titles:** Speech Language Pathologist (SLP), Speech-Language Pathologist (SLP), Speech Pathologist, Speech and Language Specialist, Speech-Language Therapist, Teacher of the Speech and Hearing Handicapped, Bilingual Speech-Language Pathologist, Speech and Language Clinician, Speech Therapist, Communication Specialist

**Educational Requirement:** Master's Degree. Most speech-language pathologist jobs require a master's degree. In 2007, more than 230 colleges and universities offered graduate programs in speech-language pathology accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology. While graduation from an accredited program is not always required to become a speech-language pathologist, it may be helpful in obtaining a license or may be required to obtain a license in some States. In 2007, 47 States regulated speech-language pathologists through licensure or registration.

**Occupational Outlook:** Employment of speech-language pathologists is expected to grow 11 percent from 2006 to 2016, about as fast as the average for all occupations. As the members of the baby boom generation continue to age, the possibility of neurological disorders and associated speech, language, and swallowing impairments increases. Medical advances also are improving the survival rate of premature infants and trauma and stroke victims, who then need assessment and sometimes treatment.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1127	Speech-Language Pathologists	700	721	21	3.0%	2	14	16

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$19.38	\$29.09	\$25.85	\$31.80

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Speech-language Pathologists	119,300	141,400	+19%	4,380

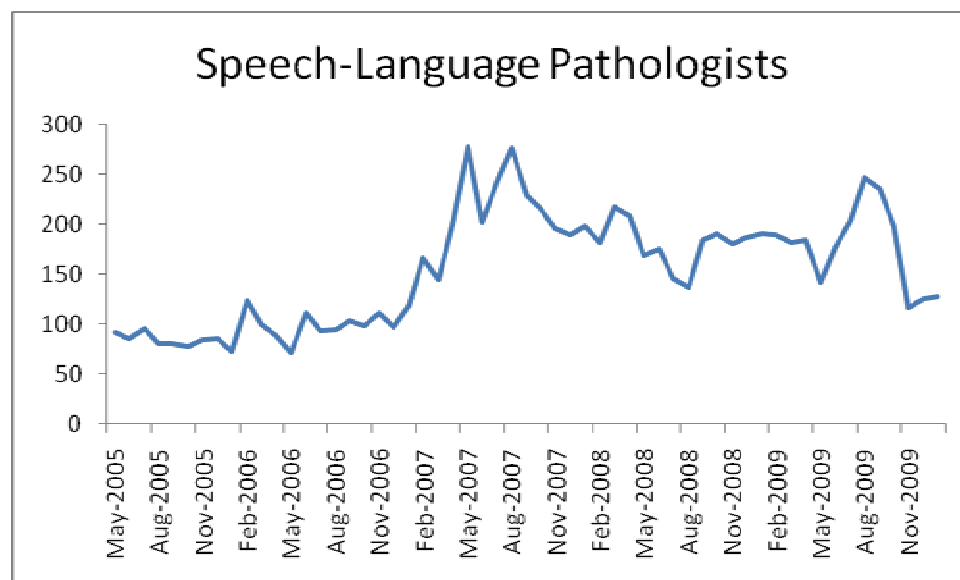
<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0201 Communication Disorders, General																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Bachelor's degree																
1	University of Maine	1	29	30	0	16	16	1	12	13	0	26	26	0	36	36
Master's degree																
1	University of Maine	0	15	15	0	9	9	1	14	15	0	19	19	0	10	10
	Program Completer Total	1	44	45		25	25	2	26	28		45	45		46	46
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs				1			1			1			1			
AMA Number of Completers				0			28			37			37			
Source: AMA																

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## 29-2055.00 - Surgical Technologists

**Occupation Description:** Assist in operations, under the supervision of surgeons, registered nurses, or other surgical personnel. May help set up operating room, prepare and transport patients for surgery, adjust lights and equipment, pass instruments and other supplies to surgeons and surgeon's assistants, hold retractors, cut sutures, and help count sponges, needles, supplies, and instruments.

**Sample of reported job titles:** Surgical Technologist (CST), Surgical Technician, Certified Surgical Technologist (CST), Operating Room Surgical Technician (OR St), Surgical Scrub Technologist, Surgical Scrub Technician, Endoscopic Technologist, Operating Room Technician (OR Tech)

**Educational Requirement:** Postsecondary Vocational Training. Surgical technologists receive their training in formal programs offered by community and junior colleges, vocational schools, universities, hospitals, and the military. In 2006, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) recognized more than 400 accredited training programs. Programs last from 9 to 24 months and lead to a certificate, diploma, or associate degree. High school graduation normally is required for admission.

**Occupational Outlook:** Employment of surgical technologists is expected to grow 24 percent between 2006 and 2016, much faster than the average for all occupations, as the volume of surgeries increases. The number of surgical procedures is expected to rise as the population grows and ages. Older people, including the baby boom generation, who generally require more surgical procedures, will account for a larger portion of the general population. In addition, technological advances, such as fiber optics and laser technology, will permit an increasing number of new surgical procedures to be performed and also will allow surgical technologists to assist with a greater number of procedures.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2055	Surgical Technologists	443	561	118	26.6%	12	14	26

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$14.62	\$20.45	\$18.51	\$19.27

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Surgical Technologists	91,500	114,700	+25%	4,630

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

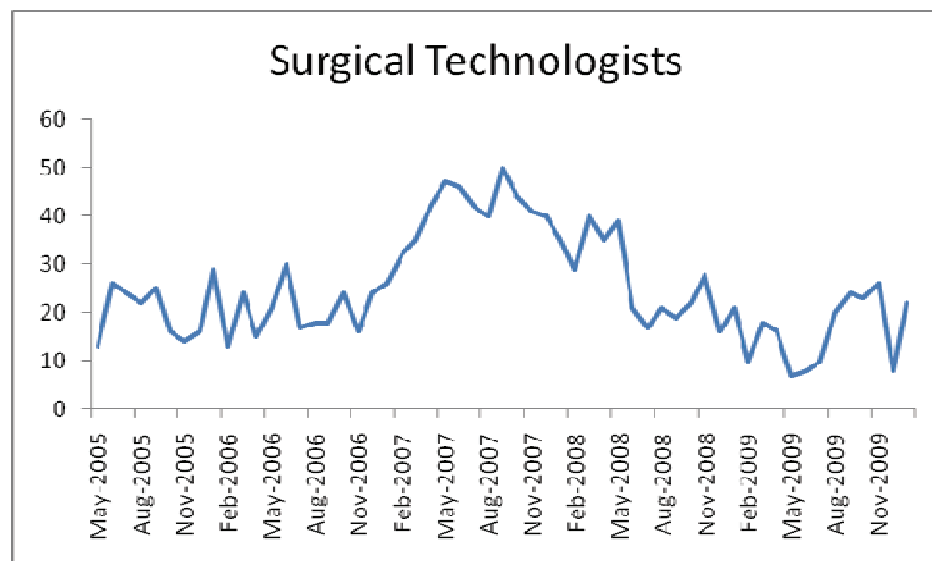
## Schools and Program Completers by Degree

In addition to the programs listed below, the Maine Medical Center School of Surgical Technology has been graduating approximately 30 students per year in their 12 month surgical technology program. This program does not participate in the federal student loan program and is therefore not captured in OSDS/IPEDS statistics. The MMC School of Surgical Technology is accredited.

Program of Study and Training: 51.0909 Surgical Technology/Technologist																	
➡	Market Share			Completers													
				2003-04			2004-05			2005-06			2006-07			2007-08	
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Award at least 1 but less than 2 academic years																	
1	Northern Maine Community College	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	
Associate's degree																	
1	Eastern Maine Community College	0	0	0	8	2	10	7	3	10	1	2	3	5	6	11	
2	Southern Maine Community College	1	1	2	0	1	1	1	0	1	0	1	1	0	1	1	
	Subtotal	1	1	2	8	3	11	8	3	11	1	3	4	5	7	12	
	Program Completer Total	1	1	2	8	7	15	8	3	11	1	3	4	5	7	12	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
AMA Number of Programs				3			3			3			2				
AMA Number of Completers				0			36			36			36				
Source: AMA																	

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 31-1011.00 - Home Health Aides

**Occupation Description:** Provide routine, personal healthcare, such as bathing, dressing, or grooming, to elderly, convalescent, or disabled persons in the home of patients or in a residential care facility.

**Sample of reported job titles:** Home Health Aide (HHA), Residential Counselor, Certified Nursing Assistant (CNA), Home Health Provider, Habilitation Training Specialist, Caregiver, Direct Support Person, Personal Care Attendant, Residential Assistant (RA)

**Educational Requirement:** Short-term on-the-job training. Home health aides are generally not required to have a high school diploma. They usually are trained on the job by registered nurses, licensed practical nurses, or experienced aides. Also, clients may prefer that tasks are done a certain way, and make those suggestions to the home health aide. A competency evaluation may be required to ensure the aide can perform the required tasks.

**Occupational Outlook:** Home health aides are expected to gain jobs faster than other aides as a result of growing demand for home services from an aging population and efforts to contain costs by moving patients out of hospitals and nursing care facilities as quickly as possible. Consumer preference for care in the home and improvements in medical technologies for in-home treatment also will contribute to much-faster-than-average employment growth for home health aides.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-1011	Home Health Aides	4,949	5,957	1,008	20.4%	101	44	145

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$8.89	\$11.70	\$10.76	\$10.31

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Home Health Aides	921,700	1,382,600	+50%	55,270

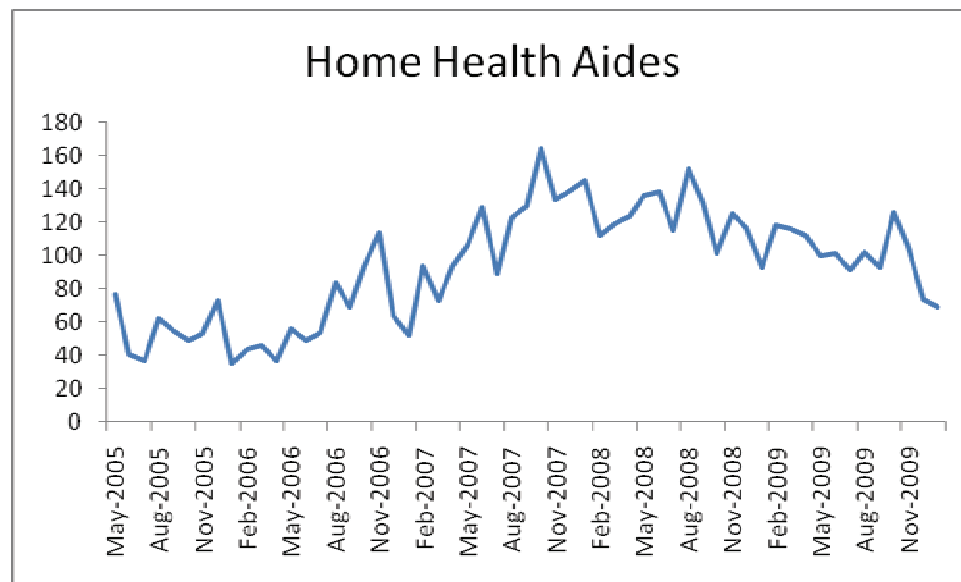
<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Home health aides require short term on-the-job training and are generally not required to have a high school diploma. They usually are trained on the job by registered nurses, licensed practical nurses, or experienced aides. Also, clients may prefer that tasks are done a certain way, and make those suggestions to the home health aide. A competency evaluation may be required to ensure the aide can perform the required tasks.<sup>53</sup>

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-1012.00 - Nursing Aides, Orderlies, and Attendants

**Occupation Description:** Provide basic patient care under direction of nursing staff. Perform duties, such as feed, bathe, dress, groom, or move patients, or change linens.

**Sample of reported job titles:** Certified Nurses Aide (CNA), Certified Nursing Assistant (CNA), Nursing Assistant, Certified Nurse Aide (CNA), Patient Care Assistant (PCA), Patient Care Technician (PCT), Certified Medication Aide (CMA), Attendant, Psychiatric Attendant, Hospital Assistant

**Education Requirement:** Postsecondary Vocational Training. In many cases, a high school diploma or equivalent is necessary for a job as a nursing aide. Hospitals may require experience as a nursing aide. Federal requirements exist for nurse aides who work in nursing care facilities. These aides must complete a minimum of 75 hours of state-approved training and pass a competency evaluation. Aides who complete the program are known as certified nurse assistants (CNAs) and are placed on the State registry of nurse aides.

**Occupational Outlook:** Nursing aide employment will not grow as fast as home health aide employment, largely because nursing aides are concentrated in relatively slower-growing industries. Employment of nursing aides is expected to grow faster than the average for all occupations through 2016, in response to the long-term care needs of an increasing elderly population. Financial pressures on hospitals to discharge patients as soon as possible should boost admissions to nursing care facilities. As a result, job openings will be more numerous in nursing and residential care facilities than in hospitals. Modern medical technology also will drive demand for nursing aides because as the technology saves and extends more lives, it increases the need for long-term care provided by aides.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-1012	Nursing Aides, Orderlies, and Attendants	10,039	10,816	777	7.7%	78	90	168

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$9.21	\$12.32	\$11.28	\$11.84

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Nursing Aides, Orderlies, and Attendants	1,469,800	1,745,800	+19%	42,230

<sup>1</sup>Job Openings refers to the average annual job openings due to growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

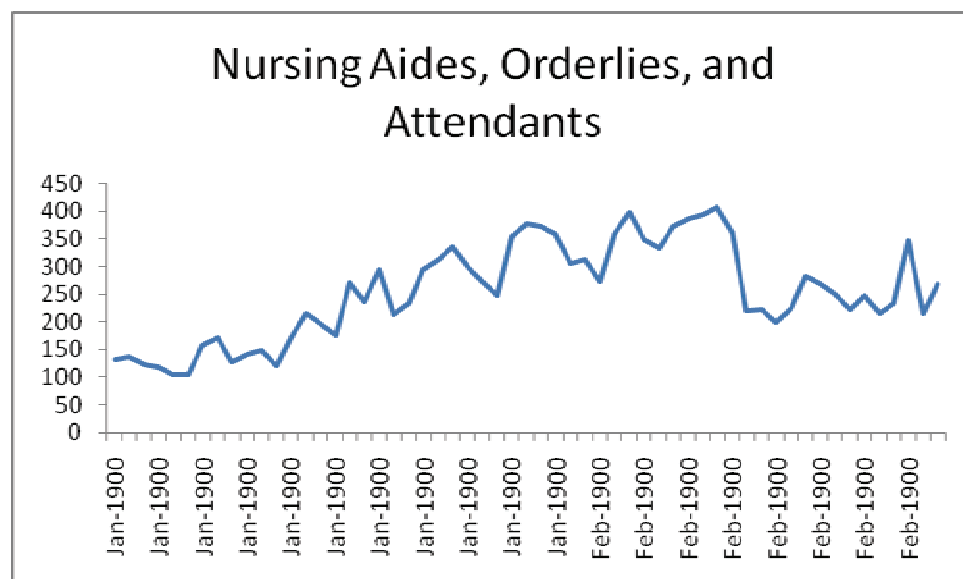
The Central Maine Medical Center College of Nursing and Health Professions canceled their CNA program several years ago. The Maine Medical Center has a CNA program that is not picked up by OSDS, as this program is totally free once one is accepted. CNA training is available at a variety of adult education and technical schools throughout the state.<sup>54</sup> The curriculum consists of a minimum of 180 program training hours.

Program of Study and Training: 51.1614 Nurse/Nursing Assistant/Aide and Patient Care Assistant																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
<b>Award of less than 1 academic year</b>																
1 Central Maine Medical Center College of Nursing and Health Professions		7	54	61	3	28	31	1	23	24	0	0	0	0	0	0
<b>Award at least 1 but less than 2 academic years</b>																
1 Intercoast Career Institute		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Program Completer Total</b>		<b>7</b>	<b>54</b>	<b>61</b>	<b>3</b>	<b>28</b>	<b>31</b>	<b>1</b>	<b>23</b>	<b>24</b>						

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1011.00 - Chiropractors

**Occupation Description:** Adjust spinal column and other articulations of the body to correct abnormalities of the human body believed to be caused by interference with the nervous system. Examine patient to determine nature and extent of disorder. Manipulate spine or other involved area. May utilize supplementary measures, such as exercise, rest, water, light, heat, and nutritional therapy.

**Sample of reported job titles:** Chiropractor, Chiropractic Doctor (DC), Chiropractic Physician, Doctor of Chiropractic, Chiropractic Neurologist, Physician

**Educational Requirement:** First Professional Degree. In 2007, 16 chiropractic programs and 2 chiropractic institutions in the United States were accredited by the Council on Chiropractic Education. Applicants must have at least 90 semester hours of undergraduate study leading toward a bachelor's degree, including courses in English, the social sciences or humanities, organic and inorganic chemistry, biology, physics, and psychology. Many applicants have a bachelor's degree, which may eventually become the minimum entry requirement. Several chiropractic colleges offer prechiropractic study, as well as a bachelor's degree program. Recognition of prechiropractic education offered by chiropractic colleges varies among the States. Chiropractic programs require a minimum of 4,200 hours of combined classroom, laboratory, and clinical experience. During the first 2 years, most chiropractic programs emphasize classroom and laboratory work in sciences such as anatomy, physiology, public health, microbiology, pathology, and biochemistry. The last 2 years focus on courses in manipulation and spinal adjustment and provide clinical experience in physical and laboratory diagnosis, neurology, orthopedics, geriatrics, physiotherapy, and nutrition. Chiropractic programs and institutions grant the degree of Doctor of Chiropractic.

**Occupational Outlook:** Employment of chiropractors is expected to increase 14 percent between 2006 and 2016, faster than the average for all occupations. Projected job growth stems from increasing consumer demand for alternative health care. Because chiropractors emphasize the importance of healthy lifestyles and do not prescribe drugs or perform surgery, chiropractic care is appealing to many health-conscious Americans. Chiropractic treatment of the back, neck, extremities, and joints has become more accepted as a result of research and changing attitudes about alternative, noninvasive health care practices. The rapidly expanding older population, with its increased likelihood of mechanical and structural problems, also will increase demand for chiropractors.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1011	Chiropractors	397	444	47	11.8%	5	4	9

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$19.51	\$42.17	\$34.62	\$39.11

## National Employment

United States	Employment		Percent	Annual Job Opening <sup>s 1</sup>
	2008	2018	Change	
Chiropractors	49,100	58,700	+19%	1,820

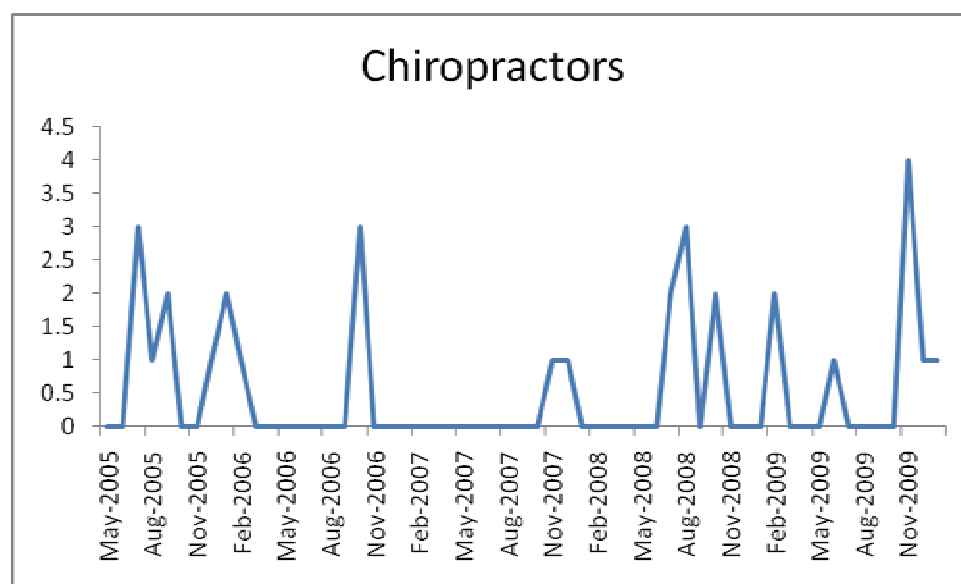
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

No Schools in Maine.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1031.00 - Dietitians and Nutritionists

**Occupation Description:** Plan and conduct food service or nutritional programs to assist in the promotion of health and control of disease. May supervise activities of a department providing quantity food services, counsel individuals, or conduct nutritional research.

**Sample of reported job titles:** Clinical Dietitian, Dietitian, Clinical Dietician, Registered Dietitian, Correctional Food Service Supervisor, Dietary Manager, Nutritionist, Outpatient Dietitian, Pediatric Clinical Dietician, Registered Dietician

**Educational Requirement:** Bachelor's Degree. Becoming a dietitian or nutritionist usually requires at least a bachelor's degree in dietetics, foods and nutrition, food service systems management, or a related area. Graduate degrees also are available. As of 2007, there were 281 bachelor's degree programs and 22 master's degree programs approved by the American Dietetic Association's Commission on Accreditation for Dietetics Education. Of the 48 States and jurisdictions with laws governing dietetics, 35 require licensure, 12 require statutory certification, and 1 requires registration. Requirements vary by State. As a result, interested candidates should determine the requirements of the State in which they want to work before sitting for any exam.

**Occupational Outlook:** Employment of dietitians and nutritionists is expected to increase 9 percent during the 2006-16 projection decade, about as fast as the average for all occupations. Job growth will result from an increasing emphasis on disease prevention through improved dietary habits. A growing and aging population will boost demand for nutritional counseling and treatment in hospitals, residential care facilities, schools, prisons, community health programs, and home health care agencies. Public interest in nutrition and increased emphasis on health education and prudent lifestyles also will spur demand, especially in food service management.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1031	Dietitians and Nutritionists	311	326	15	4.8%	2	8	10

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$15.78	\$26.72	\$23.08	\$24.75

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s1</sup>
	2008	2018		
Dietitians and Nutritionists	60,300	65,800	+9%	2,570

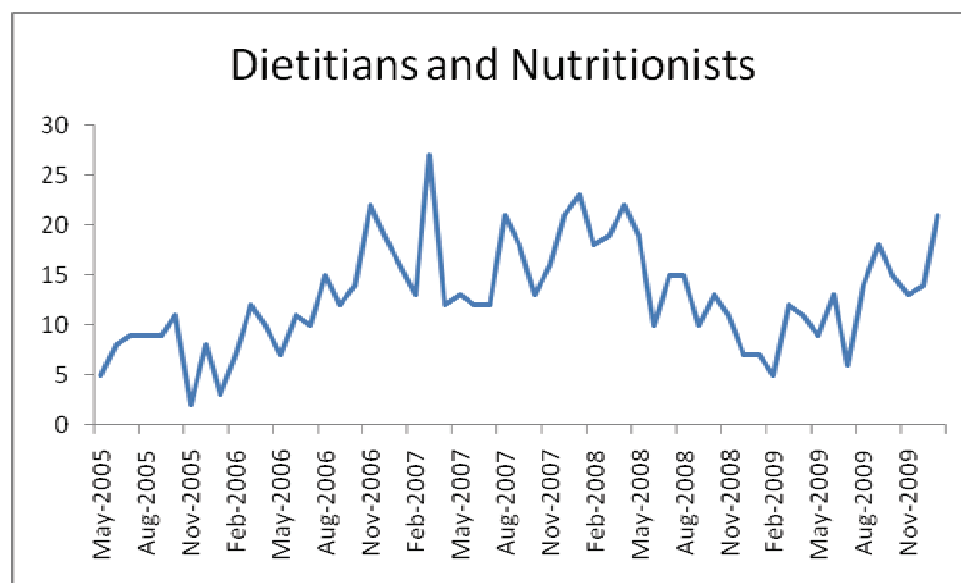
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

The University of Maine at Orono offers a B.S. degree in Food Science and Human Nutrition. Concentrations are offered in Food Science, Human Nutrition and Dietetics, Food Management, and Nutrition Science. The Human Nutrition and Dietetics concentration is designed to give professional preparation to students who want to become dietitians, nutrition scientists, nutrition educators or public health nutritionists in commercial, industrial, and public or private food and health care establishments. Graduates are eligible to apply for an American Dietetic Association accredited dietetic internship leading to state licensure and national registration. The department of Food Science and Human Nutrition offers a dietetic internship in conjunction with the Master of Science degree.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 29-2051.00 - Dietetic Technicians

**Occupation Description:** Assist dietitians in the provision of food service and nutritional programs. Under the supervision of dietitians, may plan and produce meals based on established guidelines, teach principles of food and nutrition, or counsel individuals.

**Sample of reported job titles:** Diet Tech (Dietetic Technician), Dietary Aide, Cook, Cook Chill Technician (CCT), Diet Clerk, Diet Technician Registered (DTR), Certified Dietary Manager (CDM), Dietary Manager, Nutrition Technician, Clinical Dietetic Technician

**Educational Requirement:** Postsecondary Vocational Training

**Occupational Outlook:** Faster than average.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2051	Dietetic Technicians	174	196	22	12.6%	2	5	7

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$11.29	\$15.55	\$14.13	\$13.26

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Dietetic Technicians	25,200	28,700	+14%	990

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

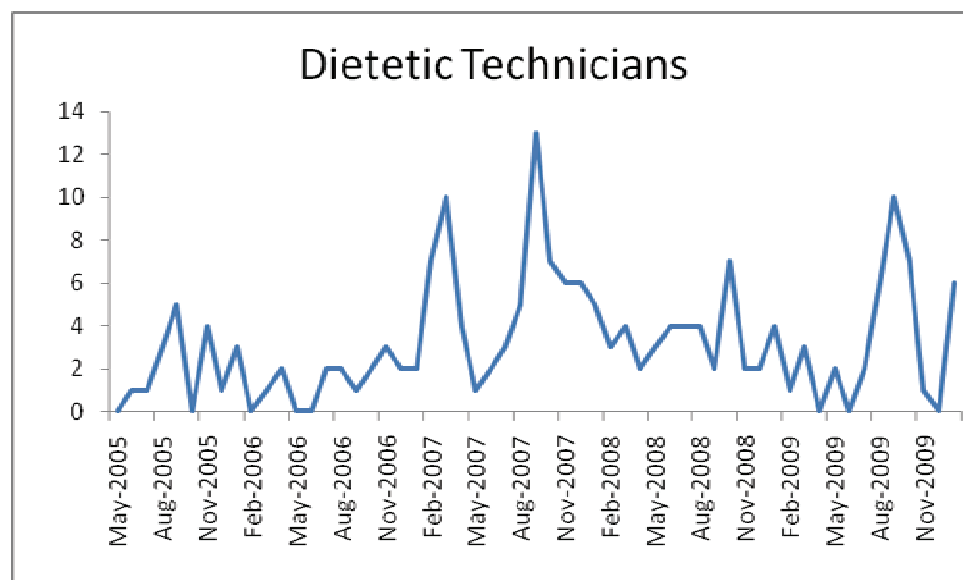
## Schools and Program Completers by Degree

Southern Maine Community College is the only school offering a program in Dietetic Technology; Washington County Community College terminated its Dietician Assistant program.

Program of Study and Training: 51.3103 Dietetic Technician (DTR)																
➡	Market Share		Completers													
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																
1	Southern Maine Community College	0	5	5	3	5	8	0	9	9	2	7	9	1	11	12
	Program Completer Total		5	5	3	5	8		9	9	2	7	9	1	11	12
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs				2			2			2			1			
AMA Number of Completers				0			0			0			0			
Source: AMA																
Program of Study and Training: 51.3104 Dietitian Assistant																
➡	Market Share		Completers													
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																
1	Washington County Community College	0	4	4	0	0	0	0	0	0	1	2	3	0	0	0
	Program Completer Total		4	4							1	2	3			
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1041.00 - Optometrists

**Occupation Description:** Diagnose, manage, and treat conditions and diseases of the human eye and visual system. Examine eyes and visual system, diagnose problems or impairments, prescribe corrective lenses, and provide treatment. May prescribe therapeutic drugs to treat specific eye conditions.

**Sample of reported job titles:** Optometrist, Doctor of Optometry (OD), Doctor

**Educational Requirement:** First Professional Degree. Optometrists need a Doctor of Optometry degree, which requires the completion of a 4-year program at an accredited optometry school. In 2006, there were 16 colleges of optometry in the U.S. and 1 in Puerto Rico that offered programs accredited by the Accreditation Council on Optometric Education of the American Optometric Association. Requirements for admission to optometry schools include college courses in English, mathematics, physics, chemistry, and biology. Because a strong background in science is important, many applicants to optometry school major in a science, such as biology or chemistry as undergraduates. Others major in another subject and take many science courses offering laboratory experience. Admission to optometry school is competitive. Applicants must take the Optometry Admissions Test, which measures academic ability and scientific comprehension. As a result, most applicants take the test after their sophomore or junior year in college, allowing them an opportunity to take the test again and raise their score. A few applicants are accepted to optometry school after 3 years of college and complete their bachelor's degree while attending optometry school. However, most students accepted by a school or college of optometry have completed an undergraduate degree. Each institution has its own undergraduate prerequisites, so applicants should contact the school or college of their choice for specific requirements.

**Occupational Outlook:** Employment of optometrists is expected to grow as fast as average for all occupations through 2016, in response to the vision care needs of a growing and aging population. Greater recognition of the importance of vision care, along with growth in employee vision care plans, will also spur job growth.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1041	Optometrists	120	143	23	19.2%	2	2	4

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$22.97	\$61.26	\$48.50	\$50.58

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Optometrists	34,800	43,200	+24%	2,010

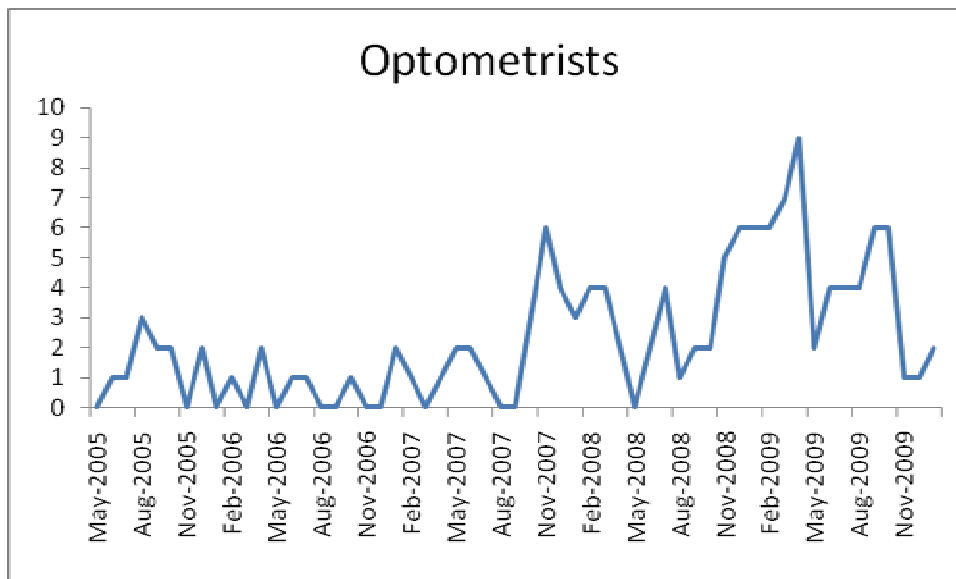
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

No Schools in Maine.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1081.00 - Podiatrists

**Occupation Description:** Diagnose and treat diseases and deformities of the human foot.

**Sample of reported job titles:** Podiatrist, Doctor of Podiatric Medicine (DPM), Podiatric Physician, Podiatric Surgeon, Physician, Practitioner, Foot and Ankle Surgeon

**Educational Requirement:** First Professional Degree. Prerequisites for admission to a college of podiatric medicine include the completion of at least 90 semester hours of undergraduate study, an acceptable grade point average, and suitable scores on the Medical College Admission Test. (Some colleges also may accept the Dental Admission Test or the Graduate Record Exam.) Admission to podiatric colleges usually requires at least 8 semester hours each of biology, inorganic chemistry, organic chemistry, and physics and at least 6 hours of English. The science courses should be those designed for premedical students. Extracurricular and community activities, personal interviews, and letters of recommendation are also important. About 95 percent of podiatric students have at least a bachelor's degree. In 2007, there were seven colleges of podiatric medicine fully accredited by the Council on Podiatric Medical Education. Colleges of podiatric medicine offer a 4-year program whose core curriculum is similar to that in other schools of medicine. During the first 2 years, students receive classroom instruction in basic sciences, including anatomy, chemistry, pathology, and pharmacology. Third-year and fourth-year students have clinical rotations in private practices, hospitals, and clinics. During these rotations, they learn how to take general and podiatric histories, perform routine physical examinations, interpret tests and findings, make diagnoses, and perform therapeutic procedures. Graduates receive the degree of Doctor of Podiatric Medicine (DPM). Most graduates complete a hospital-based residency program after receiving a DPM. Residency programs last from 2 to 4 years.

**Occupational Outlook:** Employment of podiatrists is expected to increase 9 percent from 2006 to 2016, about as fast as the average for all occupations. More people will turn to podiatrists for foot care because of the rising number of injuries sustained by a more active and increasingly older population.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1081	Podiatrists	135	142	7	5.2%	1	5	6

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$40.77	\$66.13	\$57.68	\$60.46

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Podiatrists	12,200	13,300	+9%	320

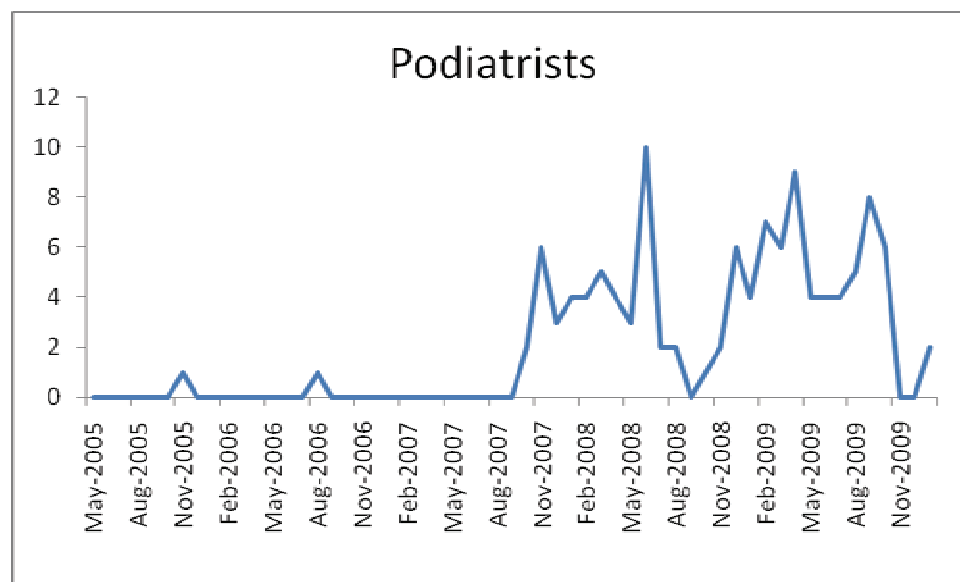
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

No Schools in Maine.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-1125.00 - Recreational Therapists

**Occupation Description:** Plan, direct, or coordinate medically-approved recreation programs for patients in hospitals, nursing homes, or other institutions. Activities include sports, trips, dramatics, social activities, and arts and crafts. May assess a patient condition and recommend appropriate recreational activity.

**Sample of reported job titles:** Recreation Therapist, Recreational Therapist, Activity Director, Rehabilitation Therapist, Activity Assistant, Therapeutic Recreation Specialist, Certified Therapeutic Recreation Specialist (CTRS), Activity Coordinator, Music Therapist (Rehabilitation), Activities Director

**Educational Requirement:** Bachelor's Degree. Most entry-level recreational therapists need a bachelor's degree in therapeutic recreation, or in recreation with a concentration in therapeutic recreation. People may qualify for paraprofessional positions with an associate degree in therapeutic recreation or another subject related to health care. An associate degree in recreational therapy; training in art, drama, or music therapy; or qualifying work experience may be sufficient for activity director positions in nursing homes. Some States regulate recreational therapists, but requirements vary.

**Occupational Outlook:** Employment of recreational therapists is expected to increase 4 percent from 2006 to 2016, slower than the average for all occupations. Employment of recreational therapists will grow to meet the therapy needs of the increasing number of older adults. In nursing care facilities—the largest industry employing recreational therapists—employment will grow slightly faster than the occupation as a whole as the number of older adults continues to grow. Fast employment growth is expected in the residential and outpatient settings that serve people who are physically disabled, cognitively disabled, or elderly or who have mental illness or substance abuse problems. Employment is expected to decline in hospitals, however, as services shift to outpatient settings and employers emphasize cost containment.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1125	Recreational Therapists	105	104	-1	-1.0%	0	2	2

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$11.98	\$19.41	\$16.93	\$19.20

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Recreational Therapists	23,300	26,700	+15%	1,160

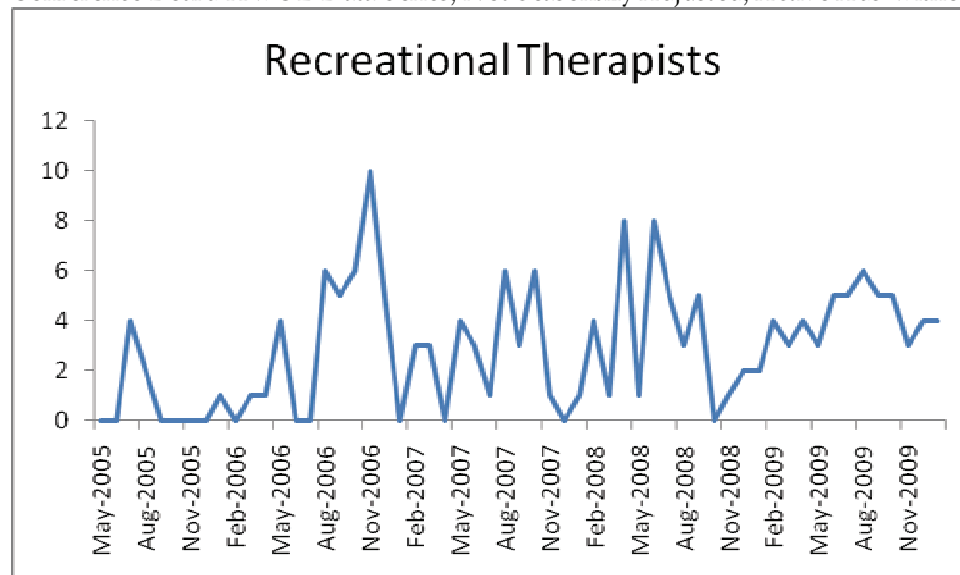
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.2309 Therapeutic Recreation/Recreational Therapy																
➡	Market Share		Completers													
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																
1	University of Southern Maine	0	1	1	1	0	1	0	1	1	0	2	2	0	1	1
Bachelor's degree																
1	Unity College	0	0	0	0	1	1	0	0	0	1	4	5	0	1	1
2	University of Southern Maine	1	7	8	0	13	13	1	7	8	3	6	9	2	6	8
	Subtotal	1	7	8		14	14	1	7	8	4	10	14	2	7	9
	Program Completer Total	1	8	9	1	14	15	1	8	9	4	12	16	2	8	10
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs				0			0			0			0			
AMA Number of Completers				0			0			0			0			
Source: AMA																

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 29-1199.00 - Health Diagnosing and Treating Practitioners, All Other

All health diagnosing and treating practitioners not listed separately, such as Acupuncturists, Naturopathic Physicians, Orthoptists and Hypnotherapists.

**Educational Requirement:** Bachelor's Degree

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-1199	Health Diagnosing and Treating Practitioners, all other	272	326	54	19.9%	5	5	10

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$20.90	\$51.66	\$41.40	\$37.76

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Health Diagnosing Practitioners, all Other	49,000	55,400	+13%	1,530

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

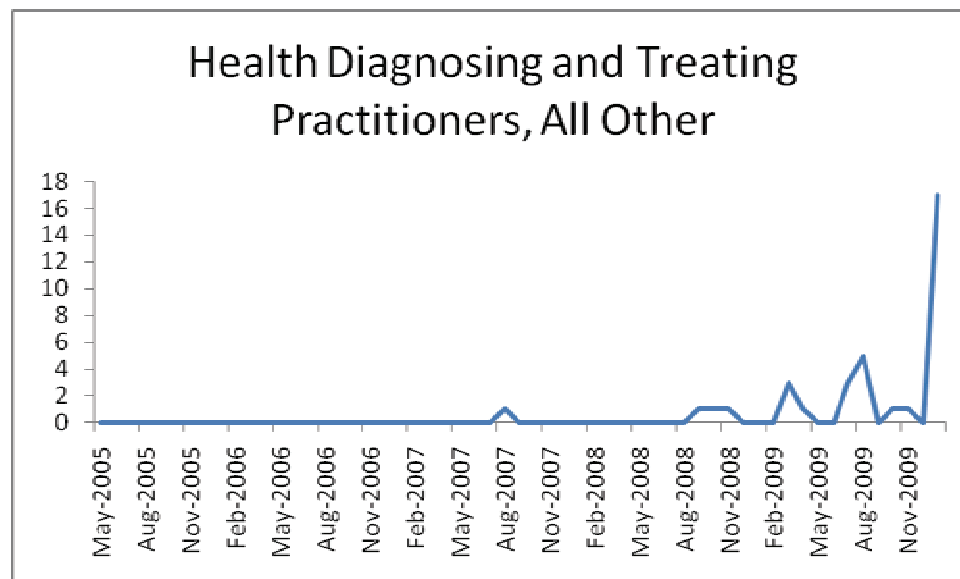
While there is no acupuncturist, homeopathic and hypnotherapy school programs in Maine, there is one midwifery program, and this is also classified under the health diagnosing and treating practitioner, all other occupation.

Program of Study and Training: 51.3401 Direct Entry Midwifery (LM, CPM)																		
➡	Market Share			Completers														
				2003-04			2004-05			2005-06			2006-07			2007-08		
	School			M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award at least 2 but less than 4 academic year																		
1	Birthwise Midwifery School			0	4	4	0	2	2	0	12	12	0	7	7	0	4	4
	Program Completer Total				4	4		2	2		12	12		7	7		4	4
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																		

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

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## 29-2011.00 - Medical and Clinical Laboratory Technologists

**Occupation Description:** Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.

**Sample of reported job titles:** Medical Technologist (MT), Medical Laboratory Technologist (Medical Lab Tech), Clinical Laboratory Scientist (CLS), Medical Laboratory Technician, Clinical Laboratory Manager, Microbiologist, Clinical Laboratory Technologist, Cytology Laboratory Manager, Medical Technician, Research Assistant

**Educational Requirement:** Bachelor's Degree. The usual requirement for an entry level position as a medical or clinical technologist is a bachelor's degree with a major in medical technology or one of the life sciences; although it is possible to qualify through a combination of education, on-the-job, and specialized training. Medical and clinical laboratory technicians generally have either an associate degree from a community or junior college or a certificate from a hospital, a vocational or technical school, or one of the U.S. Armed Forces. A few technicians learn their skills on the job.

**Occupational Outlook:** Employment of clinical laboratory workers is expected to grow 14 percent between 2006 and 2016, faster than the average for all occupations. The volume of laboratory tests continues to increase with both population growth and the development of new types of tests.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2011	Medical and Clinical Laboratory Tech.	887	1110	223	25.1%	22	13	35

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$20.04	\$27.36	\$24.92	\$25.99

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Medical and Clinical Laboratory Tech.	172,400	193,000	+12%	5,330

<sup>1</sup> Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

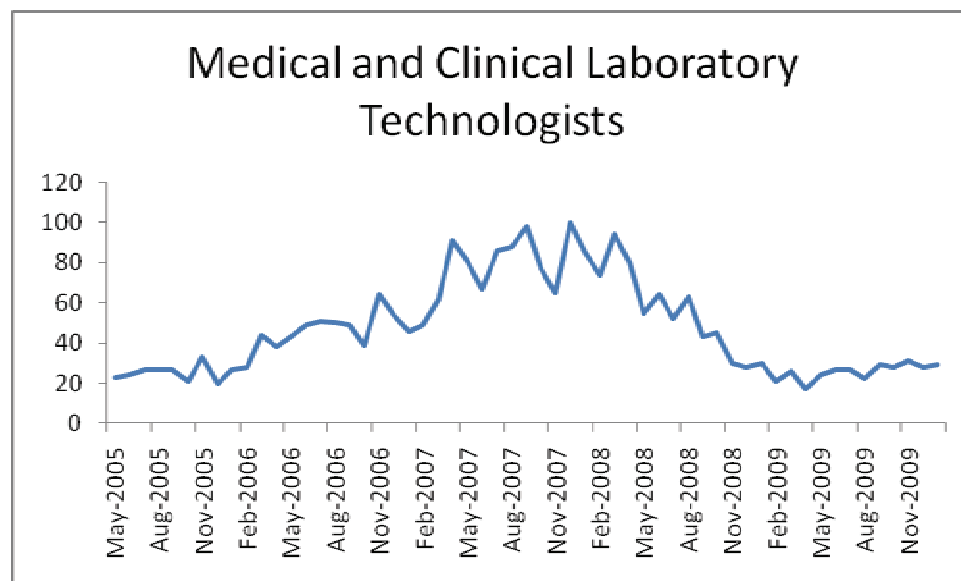
The University of Maine is the only institution in Maine granting a bachelor's degree in clinical lab sciences. Students in the Medical Technology program spend their senior year at Eastern Maine Medical Center (EMMC). The chart below lists graduates from this program from three different sources: OSDS, AMA and EMMC. Possible explanations for the differences in the number of program completers by the three sources are the elimination of dual majors (by OSDS) and different academic year definitions. This example highlights the inherent difficulties in counting program completers with our existing systems.

Program of Study and Training: 51.1005 Clinical Laboratory Science/Medical Technology/Technologist																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Bachelor's degree																
1	University of Maine	0	2	2	0	3	3	0	5	5	0	6	6	1	5	6
	Program Completer Total		2	2		3	3		5	5		6	6	1	5	6
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs				1			1			1			1			
AMA Number of Completers				3			6			6			6			
Source: AMA																
		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
EMMC/Univ. Maine		0	4	4	0	6	6	0	6	6	1	5	6	0	6	6

Source: EMMC

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## 29-2012.00 - Medical and Clinical Laboratory Technicians

**Occupation Description:** Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.

**Sample of reported job titles:** Medical Laboratory Technician (MLT), Medical Laboratory Technician (Medical Lab Tech), Laboratory Assistant (Lab Assistant), Laboratory Technician, Phlebotomist, Clinical Laboratory Scientist, Laboratory Supervisor, Non-Registered Technician, Laboratory Associate (Lab Associate), Toxicology Laboratory Technician

**Educational Requirement:** Associate's Degree. The usual requirement for an entry level position as a medical or clinical technologist is a bachelor's degree with a major in medical technology or one of the life sciences; although it is possible to qualify through a combination of education, on-the-job, and specialized training. Medical and clinical laboratory technicians generally have either an associate degree from a community or junior college or a certificate from a hospital, a vocational or technical school, or one of the U.S. Armed Forces. A few technicians learn their skills on the job.

**Occupational Outlook:** Employment of clinical laboratory workers is expected to grow 14 percent between 2006 and 2016, faster than the average for all occupations. The volume of laboratory tests continues to increase with both population growth and the development of new types of tests.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2012	Medical and Clinical Laboratory Technicians	756	896	140	18.5%	14	11	25

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$12.89	\$19.90	\$17.56	\$17.86

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Medical and Clinical Laboratory Technicians	155,600	180,700	+16%	5,460

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

The University of Maine at Augusta (UMA) and Presque Isle (UMPI) offer an Associate's Degree program in Medical Lab Technology. Although this is considered a joint program, each campus reports their program completers to NCES under a different CIP code, as seen in the chart below. The Central Maine Community College (CMCC) program has been terminated; the last class was 2008.

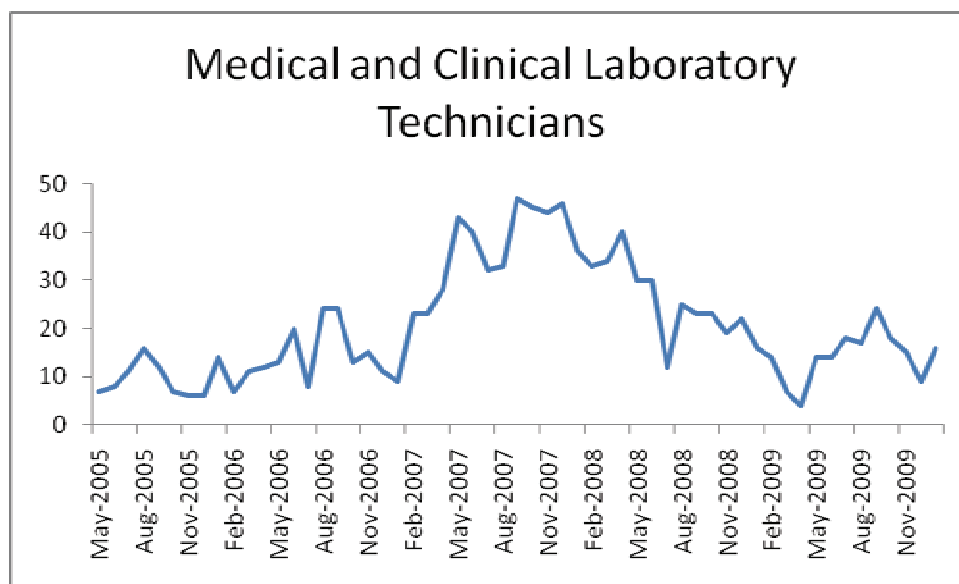
The chart below lists graduates from these programs according to different sources: OSDS, AMA and Central Maine Community College (CMCC) and Eastern Maine Medical Center (EMMC). The number of program completers differs due to a variety of reasons including mistakes in the reporting process made by the colleges (see the comments next to the table), different academic year definitions and the elimination of dual majors by OSDS. This example highlights the inherent difficulties in counting program completers with our existing systems.

Program of Study and Training: 51.1004 Clinical/Medical Laboratory Technician																	Comments		
Market Share				Completers															
				2003-04			2004-05			2005-06			2006-07			2007-08			
School				M	W	Total	M	W	Total	M	W	Total	M	W	Total	M		W	Total
Associate's degree																			
1	Central Maine Community College			0	5	5	3	7	10	0	5	5	3	2	5	0	10	10	In '07/08 there were 7, not 10 CMCC completers; CMCC had 10 "Medical Assistant" completers that were mistakenly reported as MLT completers.
2	University of Maine at Presque Isle			1	6	7	2	7	9	0	5	5	1	2	3	0	0	0	
Subtotal			1	11	12	5	14	19		10	10	4	4	8		10	10		
Program Completer Total			1	11	12	5	14	19		10	10	4	4	8		10	10		
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																			
Program of Study and Training: 51.0802 Clinical/Medical Laboratory Assistant																	UMA classifies the MLT program differently than UMPI, yet it's a joint/merged program. OSDS figures for UMA in '04 & '08 are lower than actual UMA reported figures. This is due possibly to dual majors.		
Market Share				Completers															
				2003-04			2004-05			2005-06			2006-07			2007-08			
School				M	W	Total	M	W	Total	M	W	Total	M	W	Total	M		W	Total
Associate's degree																			
1	University of Maine at Augusta			0	4	4	3	6	9	3	4	7	1	6	7	2	5	7	UMA numbers are lower than OSDS in every year. AMA surveys may not have been returned. Also, AMA and OSDS have diff. academic year definitions and OSDS eliminates double majors. AMA figures are also lower than UMPI's. This is likely due to an AMA survey not being completed.
Program Completer Total				4	4	3	6	9	3	4	7	1	6	7	2	5	7		
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																			
OSDS Total Completers																			
UMA + UMPI				11			18			12			10			7			
CMCC				5			10			5			5			10			
Total				16			28			17			15			17			
AMA Total Completers																		AMA figures are also lower than UMPI's. This is likely due to an AMA survey not being completed.	
AMA Number of Programs				2			2			2			2						
AMA Number of Completers				14			25			13			10						
Source: AMA																			
UMPI Total Completers																			
Central Maine Community College							9			4			5			8			
UMPI + UMA				1	14	15	5	14	19	3	10	13	2	10	12	3	7	10	
TOTAL							28			17			17			18			
Source: Program director at UMPI																		UMA figures match OSDS' in all but 2004 & 2008.	
UMA Completers at UMA program (CIP: 51.0802)				7			9			7			7			9			
Source: UMA																			
CMCC-Completers of CLS program (CIP: 51.1004)				5			10			5			5			7			
Source: CMCC																			
Comparing CMCC to OSDS, the number of completers in 2008 differs due to a CMCC mistake.																			

\*The number of completers for "Medical Assisting" were reported to IPEDS, instead of the number of Medical Lab Tech completers.

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## 29-2031.00 - Cardiovascular Technologists and Technicians

**Occupation Description:** Conduct tests on pulmonary or cardiovascular systems of patients for diagnostic purposes. May conduct or assist in electrocardiograms, cardiac catheterizations, pulmonary-functions, lung capacity, and similar tests.

**Sample of reported job titles:** Cardiovascular Technologist (CVT), Cardiovascular Technician, Cardiology Technician, Cardiac Technician, Registered Cardiovascular Invasive Specialist (RCIS), EKG/ECG Technician (Electrocardiogram Technician), Echo cardiographer, Electrocardiogram Technician (EKG Technician), Registered Cardiac Sonographer (RCS), Cardiopulmonary Technician

**Educational Requirement:** Associate's Degree. Although a few cardiovascular technologists are currently trained on the job, most receive training in 2- to 4-year programs. The majority of technologists complete a 2-year junior or community college program, but 4-year programs are increasingly available. Most EKG technicians are trained on the job by an EKG supervisor or a cardiologist. On-the-job training usually lasts about 8 to 16 weeks. Most employers prefer to train people already in the healthcare field—nursing aides, for example. Some EKG technicians are students enrolled in 2-year programs to become technologists, working part time to gain experience and make contact with employers.

**Occupational Outlook:** Employment of cardiovascular technologists and technicians is expected to increase by 26 percent through the year 2016, much faster than the average for all occupations. Growth will occur as the population ages, because older people have a higher incidence of heart disease and other complications of the heart and vascular system. Procedures such as ultrasound are being performed more often as a replacement for more expensive and more invasive procedures. Due to advances in medicine and greater public awareness, signs of vascular disease can be detected earlier, creating demand for cardiovascular technologists and technicians to perform various procedures.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2031	Cardiovascular Technologists and Technicians	207	260	53	25.6%	5	3	8

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$17.12	\$29.49	\$25.37	\$23.38



## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Cardiovascular Technologists and Technicians	49,500	61,400	+24%	1,910

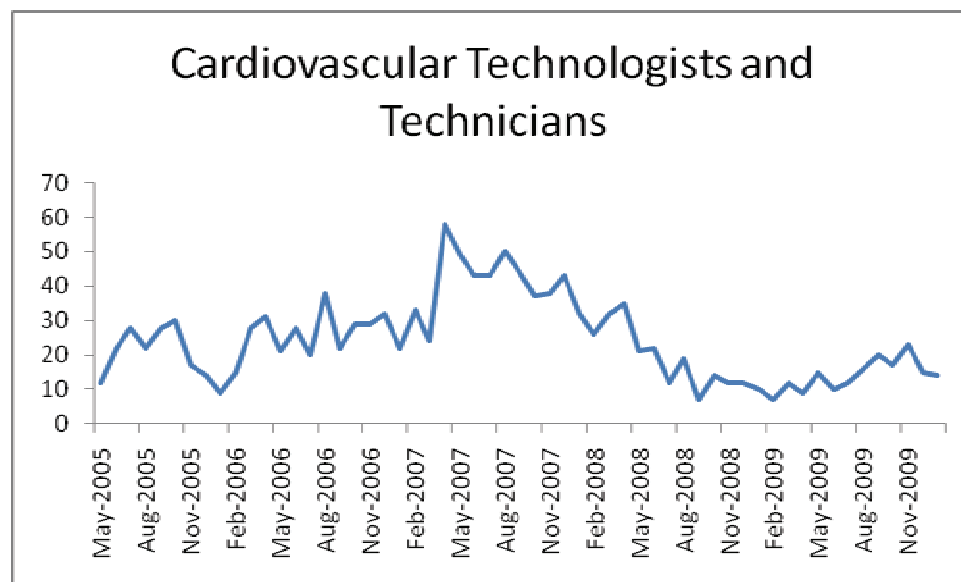
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0901 Cardiovascular Technology /Technologist																	
Rank	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Associate's degree																	
1	Southern Maine Community College		2	3	5	4	10	14	6	5	11	4	5	9	3	4	7
	Program Completer Total		2	3	5	4	10	14	6	5	11	4	5	9	3	4	7
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
AMA Number of Programs			0			0			0			0					
AMA Number of Completers			0			0			0			0					
Source: AMA																	

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## 29-2032.00 - Diagnostic Medical Sonographers

**Occupation Description:** Produce ultrasonic recordings of internal organs for use by physicians.

**Sample of reported job titles:** Sonographer, Diagnostic Medical Sonographer, Ultrasonographer, Ultrasound Technologist, Ultrasound Technician, Registered Diagnostic Medical Sonographer (RDMS), Cardiac Sonographer, Cardiac/Vascular Sonographer, Echo Tech (Echocardiographic Technician), Registered Diagnostic Medical Sonographer

**Educational Requirement:** Associate's Degree. There are several avenues for entry into the field of diagnostic medical sonography. Sonographers may train in hospitals, vocational-technical institutions, colleges and universities, and the Armed Forces. Some training programs prefer applicants with a background in science or experience in other health professions, but also will consider high school graduates with courses in mathematics and science, as well as applicants with liberal arts backgrounds. Colleges and universities offer formal training in both 2- and 4-year programs, culminating in an associate or a bachelor's degree. Two-year programs are most prevalent.

**Occupational Outlook:** Employment of diagnostic medical sonographers is expected to increase by about 19 percent through 2016—faster than the average for all occupations—as the population ages, increasing the demand for diagnostic imaging and therapeutic technology.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2032	Diagnostic Medical Sonographer	160	186	26	16.3%	3	2	5

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$26.06	\$33.74	\$31.18	\$30.12

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Diagnostic Medical Sonographer	50,300	59,500	+18%	1,650

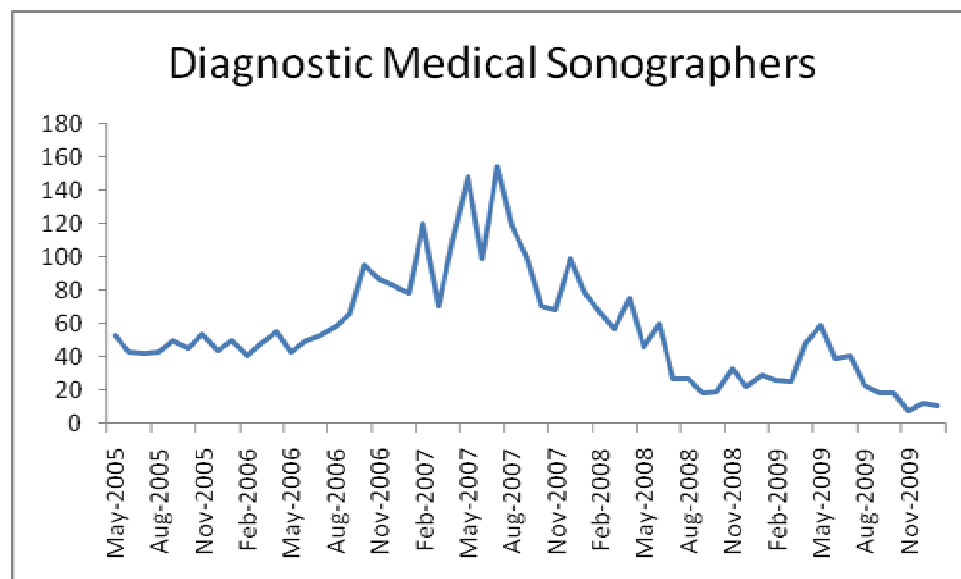
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Kennebec Valley Community College (KVCC) has an advanced certificate program in sonography. This is a 16 month program with a majority of the student experience centered on clinical training. According to KVCC's website, "The mission of this newly designed 16-month continuous diploma program in Diagnostic Medical Sonography is to train qualified Maine students for entry-level competency positions in a diagnostic ultrasound setting within a hospital, clinic, or office where abdominal and/or obstetrical gynecological diagnostic ultrasound studies are performed, and to promote quality care and patient safety through ARDMS certification. Successful students receive dedicated clinical and didactic training particular to the field of diagnostic medical ultrasound allowing them to sit for registry examinations offered by the American Registry of Diagnostic Medical Sonographers (ARDMS)."Help

## Wanted Online Job Advertisement Trend

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## 29-2033.00 - Nuclear Medicine Technologists

**Occupation Description:** Prepare, administer, and measure radioactive isotopes in therapeutic, diagnostic, and tracer studies utilizing a variety of radioisotope equipment. Prepare stock solutions of radioactive materials and calculate doses to be administered by radiologists. Subject patients to radiation. Execute blood volume, red cell survival, and fat absorption studies following standard laboratory techniques.

**Sample of reported job titles:** Nuclear Medicine Technologist, Staff Nuclear Medicine Technologist, Certified Nuclear Medicine Technologist (CNMT), Supervisor Nuclear Medicine, Radiation Safety Officer, Registered Nuclear Medicine Technologist, Nuclear Cardiology Technologist

**Educational Requirement:** Associate's Degree. Completion of a nuclear medicine technology program takes 1 to 4 years and leads to a certificate, an associate degree, or a bachelor's degree. Generally, certificate programs are offered in hospitals, associate degree programs in community colleges, and bachelor's degree programs in 4-year colleges and universities. Courses cover the physical sciences, biological effects of radiation exposure, radiation protection and procedures, the use of radiopharmaceuticals, imaging techniques, and computer applications. One-year certificate programs are for health professionals who already possess an associate degree—especially radiologic technologists and diagnostic medical sonographers—but who wish to specialize in nuclear medicine.

**Occupational Outlook:** Employment of nuclear medicine technologists is expected to increase by 15 percent from 2006 to 2016, faster than the average for all occupations. Growth will arise from technological advancement, the development of new nuclear medicine treatments, and an increase in the number of middle-aged and older persons, who are the primary users of diagnostic procedures, including nuclear medicine tests.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2033	Nuclear Medicine Technologists	72	84	12	16.7%	1	1	2

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$26.53	\$35.40	\$32.84	\$32.44

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Nuclear Medicine Technologists	21,800	25,400	+16%	670

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

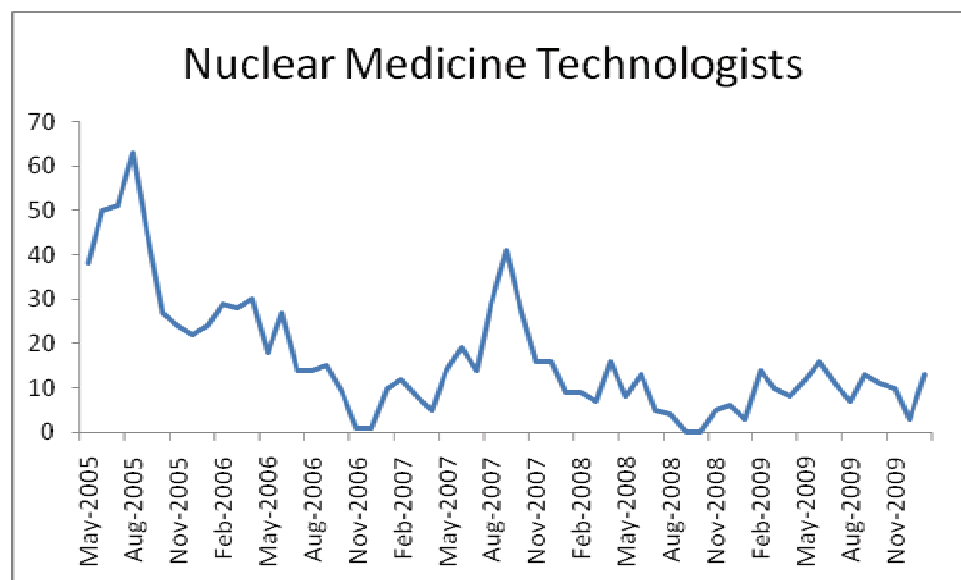
Central Maine Medical Center (CMMC) offers an 18 month program in Nuclear Medicine Technology including Computed Tomography (CT). This program is not captured by OSDS statistics due to the fact that CMMC's School of Nuclear Medicine Technology does not currently participate in the federal student loan program.

Nuclear Medical Technology				
Central Maine Medical Center School of Nuclear Medicine Technology				
	2003/04	2004/05	2005/06	2006/07
AMA Number of Programs	1	1	1	1
AMA Number of Completers	1	5	5	5

Source: AMA

## Help Wanted Online Job Advertisement Trend

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## 29-2041.00 - Emergency Medical Technicians and Paramedics

**Occupation Description:** Assess injuries, administer emergency medical care, and extricate trapped individuals. Transport injured or sick persons to medical facilities.

**Sample of reported job titles:** Emergency Medical Technician (EMT), Paramedic, Emergency Medical Technician - Basic (EMT - B), Firefighter/EMT (Firefighter/Emergency Medical Technician), Emergency Medical Technician - Intermediate (EMT - I), Firefighter/Paramedic, EMT/Dispatcher (Emergency Medical Technician/Dispatcher), Fire Fighter First Responder, First Responder, Flight Paramedic

**Educational Requirement:** Postsecondary Vocational Training. A high school diploma is usually required to enter a formal emergency medical technician training program. Training is offered at progressive levels: EMT-Basic, EMT-Intermediate, and EMT-Paramedic. At the EMT-Basic level, coursework emphasizes emergency skills, such as managing respiratory, trauma, and cardiac emergencies, and patient assessment. Formal courses are often combined with time in an emergency room or ambulance. The program provides instruction and practice in dealing with bleeding, fractures, airway obstruction, cardiac arrest, and emergency childbirth. Students learn how to use and maintain common emergency equipment, such as backboards, suction devices, splints, oxygen delivery systems, and stretchers. Graduates of approved EMT-Basic training programs must pass a written and practical examination administered by the State certifying agency or the NREMT. At the EMT-Intermediate level, training requirements vary by State. The nationally defined levels (EMT-Intermediate 1985 and EMT-Intermediate 1999) typically require 30 to 350 hours of training based on scope of practice. Students learn advanced skills such the use of advanced airway devices, intravenous fluids, and some medications. The most advanced level of training for this occupation is EMT-Paramedic. At this level, the caregiver receives training in anatomy and physiology as well as advanced medical skills. Most commonly, the training is conducted in community colleges and technical schools over 1 to 2 years and may result in an associate's degree. Such education prepares the graduate to take the NREMT examination and become certified as a Paramedic. Extensive related coursework and clinical and field experience is required. Refresher courses and continuing education are available for EMTs and paramedics at all levels.

**Occupational Outlook:** Employment of emergency medical technicians and paramedics is expected to grow by 19 percent between 2006 and 2016, which is faster than the average for all occupations. Full-time paid EMTs and paramedics will be needed to replace unpaid volunteers. It is becoming increasingly difficult for emergency medical services to recruit and retain unpaid volunteers because of the amount of training and the large time commitment these positions require. As a result, more paid EMTs and paramedics are needed. Furthermore, as a large segment of the population—aging members of the baby boom generation—becomes more likely to have medical emergencies, demand will increase for EMTs and paramedics. There also will still be demand for part-time, volunteer EMTs and paramedics in rural areas and smaller metropolitan areas.

## Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2041	Emergency Medical Tech and Paramedics	1362	1642	280	20.6%	28	16	44

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$9.95	\$15.49	\$13.64	\$15.38

## National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Emergency Medical Technicians and Paramedics	210,700	229,700	+9%	6,200

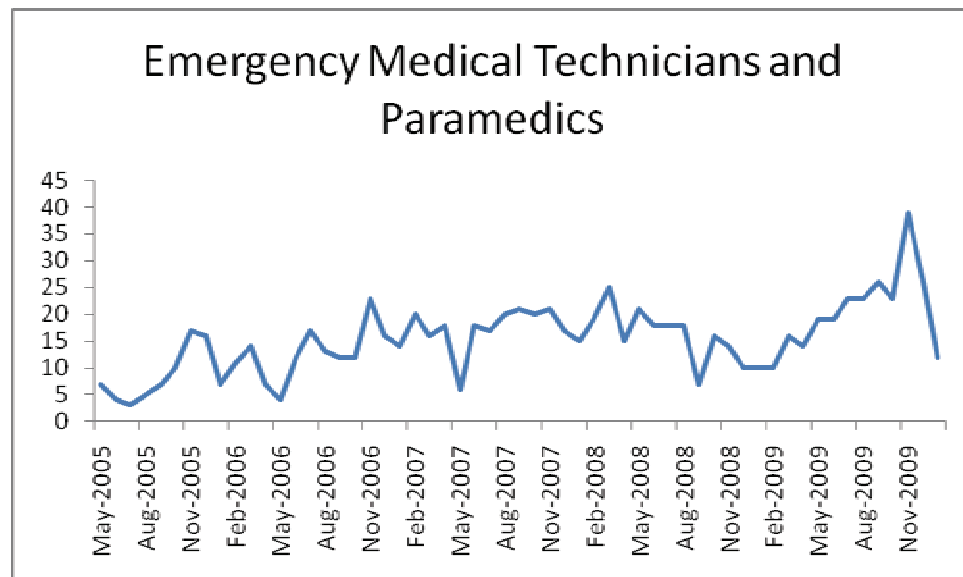
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0904 Emergency Medical Technology / Technician (EMT Paramedic)																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award of less than 1 academic year																
1	Northern Maine Community College	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Award at least 1 but less than 2 academic years																
1	Eastern Maine Community College	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1
2	Kennebec Valley Community College	0	0	0	0	0	0	0	0	0	13	10	23	17	8	25
3	Northern Maine Community College	0	1	1	1	0	1	1	0	1	1	0	1	0	0	0
	Subtotal		1	1	1		1	2		2	14	10	24	18	8	26
Associate's degree																
1	Eastern Maine Community College	0	0	0	0	0	0	2	0	2	1	0	1	0	0	0
2	Kennebec Valley Community College	0	0	0	1	0	1	0	0	0	4	0	4	1	0	1
3	Northern Maine Community College	2	0	2	2	1	3	1	1	2	0	0	0	1	0	1
4	Southern Maine Community College	9	6	15	9	9	18	7	10	17	8	7	15	8	3	11
	Subtotal	11	6	17	12	10	22	10	11	21	13	7	20	10	3	13
	Program Completer Total	11	7	18	13	10	23	12	11	23	27	17	44	28	11	39
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs																
AMA Number of Completers																
Source: AMA																

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 29-2053.00 - Psychiatric Technicians

**Occupation Description:** Care for mentally impaired or emotionally disturbed individuals, following physician instructions and hospital procedures. Monitor patients' physical and emotional well-being and report to medical staff. May participate in rehabilitation and treatment programs, help with personal hygiene, and administer oral medications and hypodermic injections.

**Sample of reported job titles:** Psychiatric Technician, Mental Health Assistant (MHA), Mental Health Technician (MHT), Health Care Technician, Mental Health Worker

**Educational Requirement:** Postsecondary Vocational Training. In many cases, a high school diploma or equivalent is necessary for a job as a psychiatric aide. Psychiatric aide training is offered in high schools, vocational-technical centers, some nursing care facilities, and some community colleges. Some States also require psychiatric aides to complete a formal training program. However, most psychiatric aides learn their skills on the job from experienced workers.

**Occupational Outlook:** Little or no change is expected in employment of psychiatric aides—the smallest of the three occupations. Most psychiatric aides currently work in hospitals, but the industries most likely to see growth will be residential facilities for people with developmental disabilities, mental illness, and substance abuse problems. There is a long-term trend toward treating psychiatric patients outside of hospitals because it is more cost effective and allows patients to live more independent lives. Demand for psychiatric aides in residential facilities will rise in response to the increase in the number of older persons, many of whom will require mental health services. Growing demand for these workers also rests on an increasing number of mentally disabled adults who were formerly cared for by their elderly parents and who will continue to need care. Job growth also could be affected by changes in government funding of programs for the mentally ill.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2053	Psychiatric Technicians	218	261	43	19.7%	4	7	11

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$9.88	\$14.56	\$13.00	\$15.48

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Psychiatric Technicians	57,100	59,500	+4%	1,680

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.1502 Psychiatric/Mental Health Services Technician																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award at least 1 but less than 2 academic years																
1	Kennebec Valley Community College	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0
Program Completer Total								3	3							

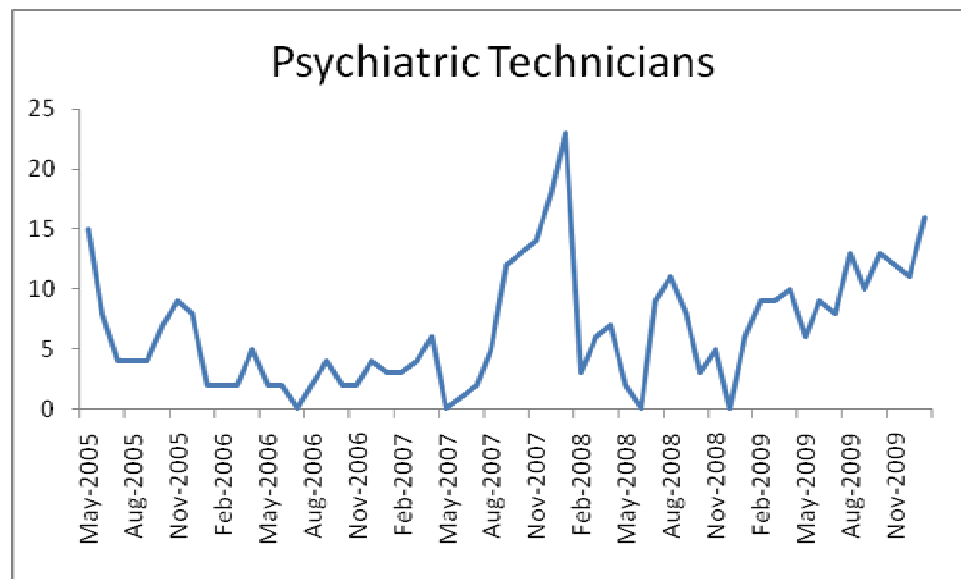
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

AMA Number of Programs  
AMA Number of Completers

Source: AMA

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-1013.00 - Psychiatric Aides

**Occupation Description:** Assist mentally impaired or emotionally disturbed patients, working under direction of nursing and medical staff.

**Sample of reported job titles:** Residential Counselor, Mental Health Worker, Therapeutic Program Worker (TPW), Certified Nursing Assistant (CNA), Mental Health Technician, Nursing Assistant, Developmental Aide, Psychiatric Aide, Psychiatric Nursing Aide

**Educational Requirement:** Short-term on-the-job Training. In many cases, a high school diploma or equivalent is necessary for a job as a psychiatric aide. Psychiatric aide training is offered in high schools, vocational-technical centers, some nursing care facilities, and some community colleges. Some States also require psychiatric aides to complete a formal training program. However, most psychiatric aides learn their skills on the job from experienced workers.

**Occupational Outlook:** Little or no change is expected in employment of psychiatric aides—the smallest of the three occupations. Most psychiatric aides currently work in hospitals, but the industries most likely to see growth will be residential facilities for people with developmental disabilities, mental illness, and substance abuse problems. There is a long-term trend toward treating psychiatric patients outside of hospitals because it is more cost effective and allows patients to live more independent lives. Demand for psychiatric aides in residential facilities will rise in response to the increase in the number of older persons, many of whom will require mental health services. Growing demand for these workers also rests on an increasing number of mentally disabled adults who were formerly cared for by their elderly parents and who will continue to need care. Job growth also could be affected by changes in government funding of programs for the mentally ill.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-1013	Psychiatric Aides	629	708	79	12.6%	8	6	14

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$10.90	\$15.15	\$13.74	\$13.10

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Psychiatric Aides	62,500	66,100	+6%	980

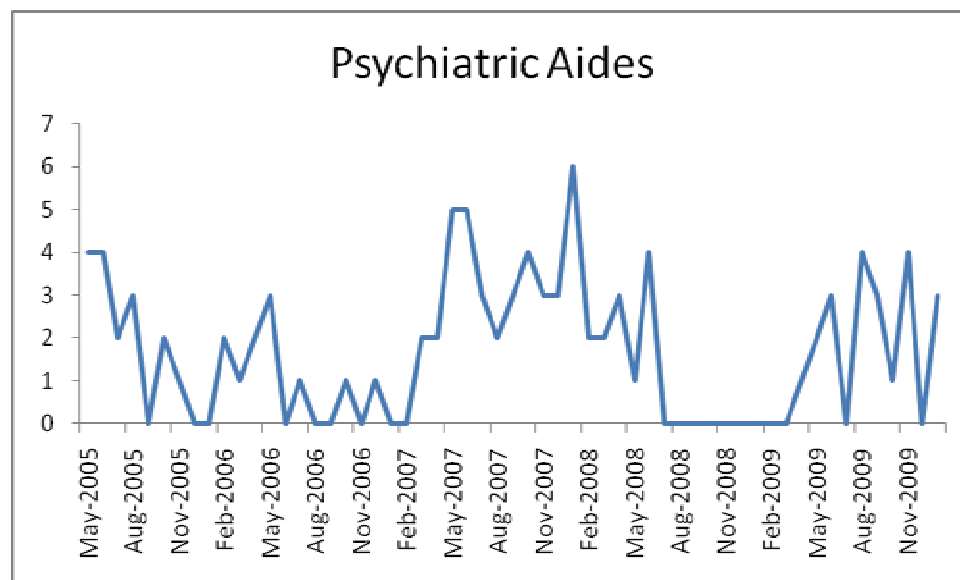
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Short-term on-the-job Training.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-2071.00 - Medical Records and Health Information Technicians

**Occupation Description:** Compile, process, and maintain medical records of hospital and clinic patients in a manner consistent with medical, administrative, ethical, legal, and regulatory requirements of the health care system. Process, maintain, compile, and report patient information for health requirements and standards.

**Sample of reported job titles:** Medical Records Clerk, Health Information Clerk, Medical Records Technician, Office Manager, File Clerk, Medical Records Coordinator, Medical Records Analyst, Medical Records Director, Receptionist, Coder

**Educational Requirement:** Associate's Degree. Medical records and health information technicians generally obtain an associate degree from a community or junior college. Typically, community and junior colleges offer flexible course scheduling or online distance learning courses. In addition to general education, coursework includes medical terminology, anatomy and physiology, legal aspects of health information, health data standards, coding and abstraction of data, statistics, database management, quality improvement methods, and computer science. Applicants can improve their chances of admission into a program by taking biology, math, chemistry, health, and computer science courses in high school.

**Occupational Outlook:** Employment of medical records and health information technicians is expected to increase by 18 percent through 2016—faster than the average for all occupations—because of rapid growth in the number of medical tests, treatments, and procedures that will be increasingly scrutinized by health insurance companies, regulators, courts, and consumers. Also, technicians will be needed to enter patient information into computer databases to comply with Federal legislation mandating the use of electronic medical records.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2071	Medical Records and Health Information Tech	768	894	126	16.4%	13	21	34

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$10.93	\$17.25	\$15.14	\$15.85

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Medical Records and Health Information Tech	172,500	207,600	+20%	7,030

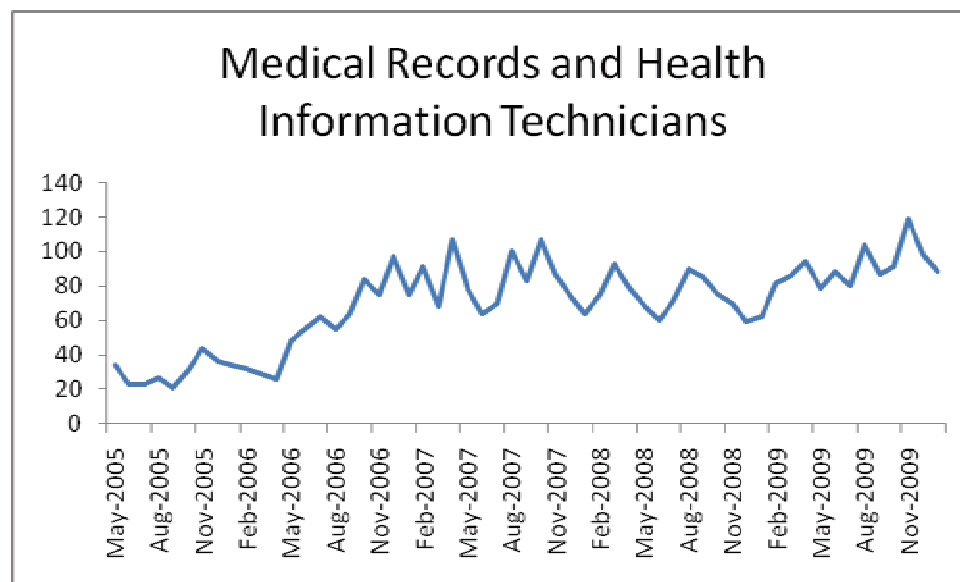
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0707 Health Information/Medical Records Technology/Technician																		
Market Share		Completers																
		2003-04			2004-05			2005-06			2006-07			2007-08				
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total		
Award at least 1 but less than 2 academic years																		
1	Beal College	3	37	40	0	22	22	1	26	27	2	16	18	1	13	14		
2	Kennebec Valley Community College	0	13	13	1	14	15	0	6	6	0	5	5	0	1	1		
	Subtotal	3	50	53	1	36	37	1	32	33	2	21	23	1	14	15		
Associate's degree																		
1	Kennebec Valley Community College	0	10	10	0	17	17	1	11	12	0	10	10	1	12	13		
	Program Completer Total	3	60	63	1	53	54	2	43	45	2	31	33	2	26	28		
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																		
AMA Number of Programs				0			0			0			0					
AMA Number of Completers				0			0			0			0					
Source: AMA																		

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-2081.00 - Opticians, Dispensing

**Occupation Description:** Design, measure, fit, and adapt lenses and frames for client according to written optical prescription or specification. Assist client with selecting frames. Measure customer for size of eyeglasses and coordinate frames with facial and eye measurements and optical prescription. Prepare work order for optical laboratory containing instructions for grinding and mounting lenses in frames. Verify exactness of finished lens spectacles. Adjust frame and lens position to fit client. May shape or reshape frames.

**Sample of reported job titles:** Optician, Dispensing Optician, Licensed Optician, Optometric Assistant, Certified Optician, Licensed Dispensing Optician, Ophthalmic Dispenser, Optometric Technician, Optical Technician, Contact Lens Technician

**Educational Requirement:** Long-term on-the-job Training. A high school diploma is all that is required to get into this occupation, but most workers have completed at least some college courses or a degree. Most applicants for optician positions do not have any background in the field and learn mainly on the job. Large employers usually offer structured apprenticeship programs; small employers provide more informal, on-the-job training. Apprentices receive technical training and also learn office management and sales. Under the supervision of an experienced optician, optometrist, or ophthalmologist, apprentices work directly with patients, fitting eyeglasses and contact lenses. Formal training in the field is offered in community colleges and in a few 4-year colleges and universities. As of 2007, the Commission on Opticianry Accreditation accredited 21 associate degree programs. Graduation from an accredited program in opticianry provides a nationally recognized credential. There also are shorter programs of 1 year or less. Twenty-one States require dispensing opticians to be licensed.

**Occupational Outlook:** Employment of dispensing opticians is expected to grow about as fast as average for all occupations through 2016, as the population ages and demand for corrective lenses increases. Good job prospects are expected, but the occupation will remain relatively small.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2081	Opticians, Dispensing	289	302	13	4.5%	1	9	10

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$11.85	\$17.37	\$15.53	\$16.85

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Opticians, Dispensing	59,800	67,800	+13%	2,020

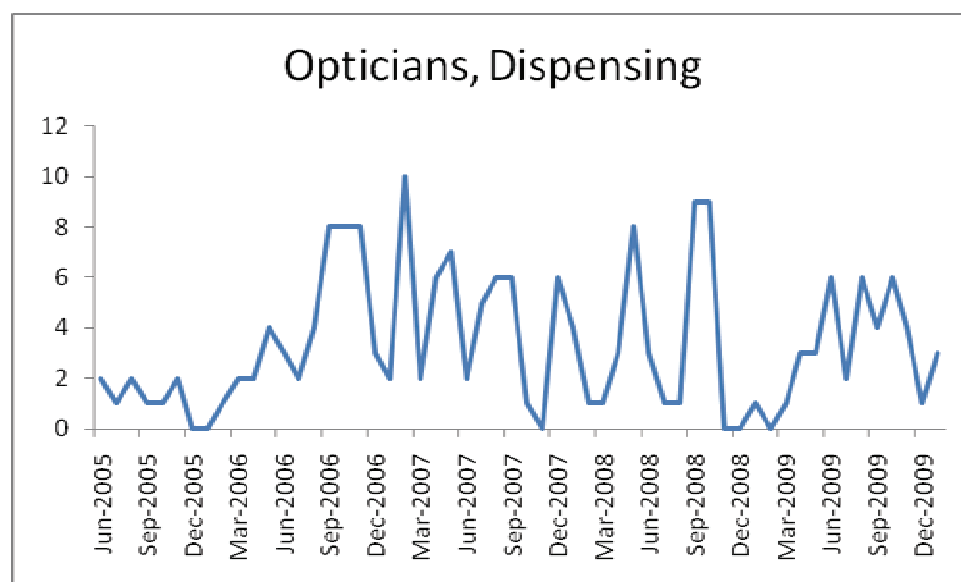
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

No Schools in Maine.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 29-2099.00 - Health Technologists and Technicians, All Other

All health technologists and technicians not listed separately, such as Electroneurodiagnostic Technologists, Hearing Aid Specialists, Ophthalmic Medical Technologists and Technicians, and Nurse Midwives

**Educational Requirement:** Postsecondary Vocational Training.

**Occupational Outlook:** No narrative for this cluster

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-2099	Health Technologists all other	101	116	15	14.9%	2	1	3

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$12.70	\$25.37	\$21.15	\$19.89

### National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Health Technologist all other	81,800	97,100	+19%	3,200

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

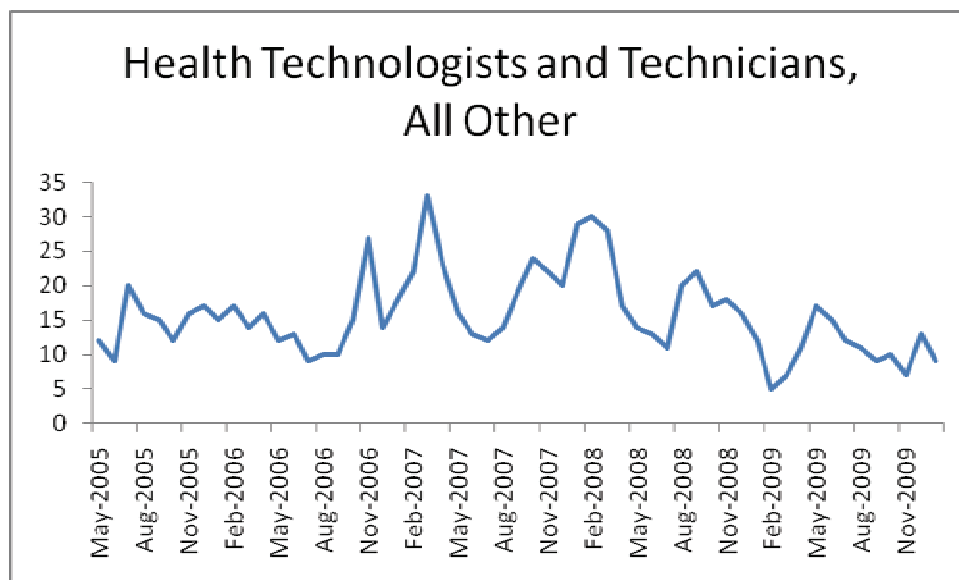
### Schools and Program Completers by Degree

Program of Study and Training: 51.3401 Direct Entry Midwifery (LM, CPM)															
Market Share				Completers											
				2003-04			2004-05			2005-06			2006-07		
School				M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award at least 2 but less than 4 academic year															
1 Birthwise Midwifery School				0	4	4	0	2	2	0	12	12	0	7	7
Program Completer Total				4	4		2	2		12	12		7	7	4

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-9011.00 - Occupational Health and Safety Specialists

**Occupation Description:** Review, evaluate, and analyze work environments and design programs and procedures to control, eliminate, and prevent disease or injury caused by chemical, physical, and biological agents or ergonomic factors. May conduct inspections and enforce adherence to laws and regulations governing the health and safety of individuals. May be employed in the public or private sector.

**Sample of reported job titles:** Health and Safety Manager, Safety Specialist, Safety Consultant, Corporate Safety Director, Environmental Health and Safety Manager, Loss Control Consultant, Loss Control Representative, Risk Control Consultant

**Educational Requirement:** Bachelor's Degree. All occupational health and safety specialists and technicians are trained in the applicable laws or inspection procedures through some combination of classroom and on-the-job training. Some employers require occupational health and safety specialists to have a bachelor's degree in occupational health, safety, or a related field, such as engineering, biology, or chemistry. For some positions, a master's degree in industrial hygiene or a related subject is required. There also are associate degree and 1-year certificate programs, which primarily are intended for technicians.

**Occupational Outlook:** Employment of occupational health and safety specialists and technicians is expected to increase 9 percent during the 2006-16 decade, about as fast as the average for all occupations, reflecting a balance of continuing public demand for a safe and healthy work environment against the desire for smaller government and fewer regulations. Emergency preparedness will continue to increase in importance, creating demand for these workers. More specialists will be needed to cope with technological advances in safety equipment and threats, changing regulations, and increasing public expectations. In private industry, employment growth will reflect overall business growth and continuing self-enforcement of government and company regulations and policies.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-9011	Occupational Health and Safety Specialist	233	229	-4	-1.7%	0	4	4

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$23.80	\$34.44	\$30.89	\$30.31

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Occupational Health and Safety Specialist	55,800	62,000	+11%	2,490

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

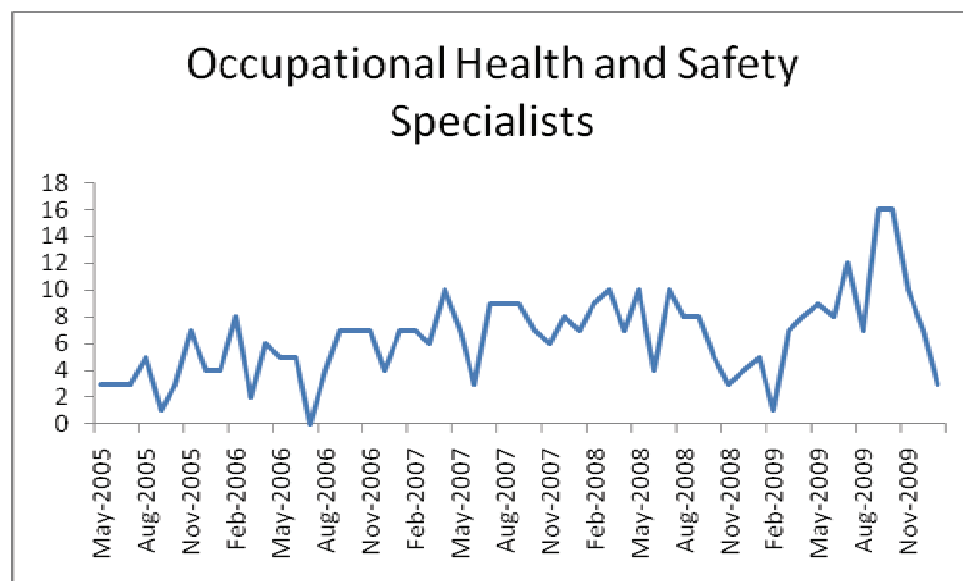
Program completers in the table below include occupational health and safety technicians.

Program of Study and Training: 15.0701 Occupational Safety and Health Technology / Technician																	
➡	Market Share		Completers														
			2003-04			2004-05			2005-06			2006-07			2007-08		
	School		M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award at least 1 but less than 2 academic years																	
1	Central Maine Community College		1	1	2	0	0	0	2	2	4	2	2	4	1	0	1
Associate's degree																	
1	Central Maine Community College		1	1	2	2	1	3	4	2	6	0	2	2	1	2	3
	Program Completer Total		2	2	4	2	1	3	6	4	10	2	4	6	2	2	4
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-9012.00 - Occupational Health and Safety Technicians

**Occupation Description:** Collect data on work environments for analysis by occupational health and safety specialists. Implement and conduct evaluation of programs designed to limit chemical, physical, biological, and ergonomic risks to workers.

**Sample of reported job titles:** Industrial Hygienist, Construction Safety Consultant, Safety Manager

**Educational Requirement:** Bachelor's Degree. All occupational health and safety specialists and technicians are trained in the applicable laws or inspection procedures through some combination of classroom and on-the-job training. Some employers require occupational health and safety specialists to have a bachelor's degree in occupational health, safety, or a related field, such as engineering, biology, or chemistry. For some positions, a master's degree in industrial hygiene or a related subject is required. There also are associate degree and 1-year certificate programs, which primarily are intended for technicians.

**Occupational Outlook:** Employment of occupational health and safety specialists and technicians is expected to increase 9 percent during the 2006-16 decade, about as fast as the average for all occupations, reflecting a balance of continuing public demand for a safe and healthy work environment against the desire for smaller government and fewer regulations. Emergency preparedness will continue to increase in importance, creating demand for these workers. More specialists will be needed to cope with technological advances in safety equipment and threats, changing regulations, and increasing public expectations. In private industry, employment growth will reflect overall business growth and continuing self-enforcement of government and company regulations and policies.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-9012	Occupational Health and Safety Technicians	43	46	3	7.0%	0	1	1

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$13.80	\$21.24	\$18.76	\$22.79

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Occupational Health and Safety Technicians	10,900	12,500	+14%	520

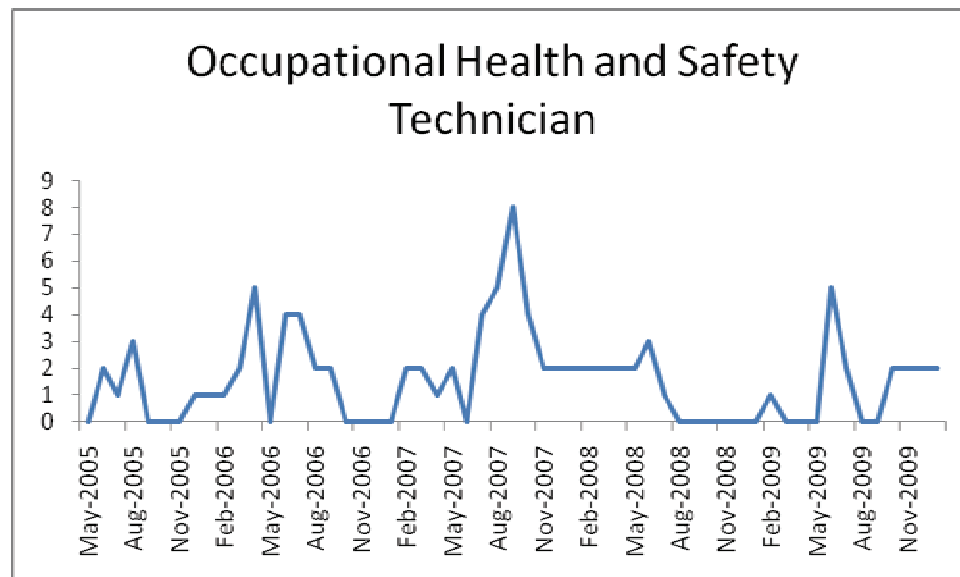
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

See data for “Occupational Health and Safety Specialists.”

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 29-9091.00 - Athletic Trainers

**Occupation Description:** Evaluate, advise, and treat athletes to assist recovery from injury, avoid injury, or maintain peak physical fitness.

**Sample of reported job titles:** Athletic Trainer, Certified Athletic Trainer, Athletic Instructor, Clinical Instructor, Resident Athletic Trainer

**Educational Requirement:** Bachelor's Degree. A bachelor's degree from an accredited college or university is required for almost all jobs as an athletic trainer. In 2006, there were more than 350 accredited programs nationwide. Students in these programs are educated both in the classroom and in clinical settings. Formal education includes many science and health-related courses, such as human anatomy, physiology, nutrition, and biomechanics. According to the National Athletic Trainers Association, 68 percent of athletic trainers have a master's or doctoral degree. Athletic trainers may need a master's or higher degree to be eligible for some positions, especially those in colleges and universities, and to increase their advancement opportunities. Because some positions in high schools involve teaching along with athletic trainer responsibilities, a teaching certificate or license could be required. In 2006, 46 States required athletic trainers to be licensed or registered; this requires certification from the Board of Certification, Inc. (BOC).

**Occupational Outlook:** Employment of athletic trainers is expected to grow 24 percent from 2006 to 2016, much faster than the average for all occupations. Job growth will be concentrated in the health care industry, including hospitals and offices of health practitioners. Fitness and recreation sports centers also will provide many new jobs, as these establishments become more common and continue to need athletic trainers to care for their clients. Growth in positions with sports teams will be somewhat slower, however, as most professional sports clubs and colleges and universities already have complete athletic training staffs.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-9091	Athletic Trainers	72	76	4	5.6%	0	1	1

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$35,630	\$47,500	\$43,540	\$41,620

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Athletic Trainers	16,400	22,400	+37%	1,150

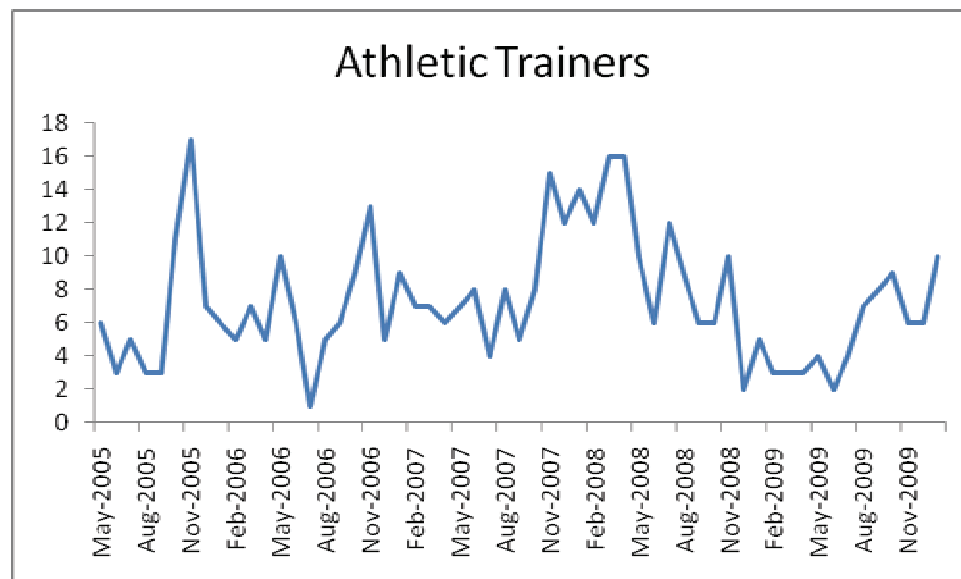
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0913 Athletic Training/Trainer																
Market Share		Completers														
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Bachelor's degree																
1	University of Maine at Presque Isle	2	5	7	2	0	2	2	0	2	4	4	8	4	1	5
2	University of New England	5	5	10	3	4	7	0	6	6	2	5	7	5	14	19
3	University of Southern Maine	0	1	1	2	5	7	1	4	5	2	2	4	2	1	3
	Subtotal	7	11	18	7	9	16	3	10	13	8	11	19	11	16	27
	Program Completer Total	7	11	18	7	9	16	3	10	13	8	11	19	11	16	27
Source: National Center for Educational Statistics, Degrees Conferred																
AMA Number of Programs				1		1		1		4						
AMA Number of Completers				4		4		4		5						
Source: AMA																

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates





## 29-9099.00 - Healthcare Practitioners and Technical Workers, All Other

All healthcare practitioners and technical workers not listed separately, such as Midwives and Genetic Counselors.

**Educational Requirement:** Bachelor's Degree

**Occupational Outlook:** No narrative for this cluster.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
29-9099	Healthcare Practitioners, all others	362	437	75	20.7%	8	7	15

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$14.99	\$30.19	\$25.12	\$24.28

### National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s1</sup>
	2008	2018		
Healthcare Practitioners, all other	59,000	68,400	+16%	2,910

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

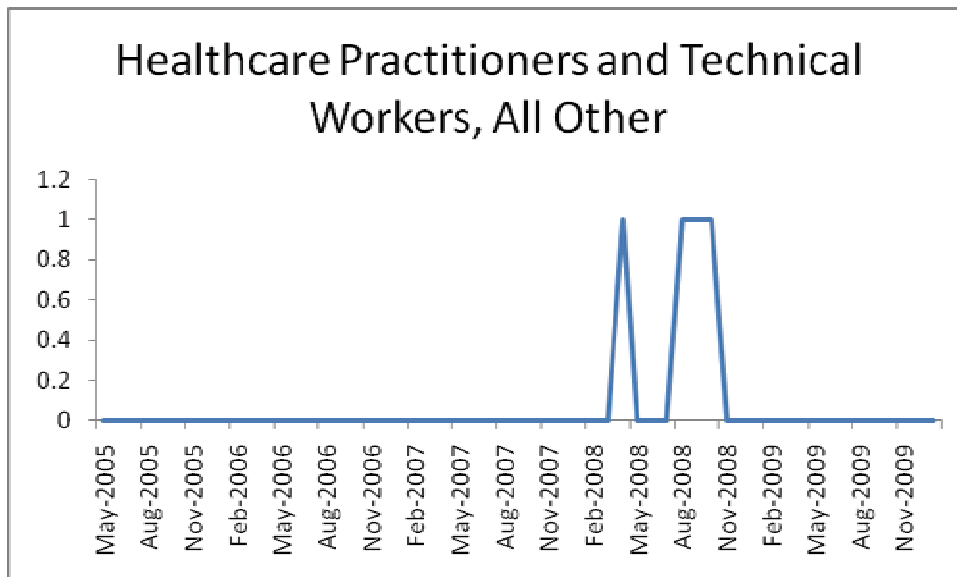
### Schools and Program Completers by Degree

Program of Study and Training: 51.3401 Direct Entry Midwifery (LM, CPM)																	
Market Share		Completers															
		2003-04			2004-05			2005-06			2006-07			2007-08			
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Award at least 2 but less than 4 academic year																	
1	Birthwise Midwifery School	0	4	4	0	2	2	0	12	12	0	7	7	0	4	4	
	Program Completer Total		4	4		2	2		12	12		7	7		4	4	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9011.00 - Massage Therapists

**Occupation Description:** Massage customers for hygienic or remedial purposes.

**Sample of reported job titles:** Massage Therapist, Licensed Massage Therapist, Certified Massage Therapist (CMT), Licensed Massage Practitioner, Registered Massage Therapist, Bodywork Therapist, Integrated Deep Tissue Massage Therapist, Therapeutic Massage Technician

**Educational Requirement:** Postsecondary Vocational Training. Training standards and requirements for massage therapists vary greatly by State and locality. There are roughly 1,500 massage therapy postsecondary schools, college programs, and training programs throughout the country. Massage therapy programs generally cover subjects such as anatomy; physiology, the study of organs and tissues; kinesiology, the study of motion and body mechanics; business; ethics; as well as hands-on practice of massage techniques. Training programs may concentrate on certain modalities of massage. Several programs also provide alumni services such as post-graduate job placement and continuing educational services. Both full- and part-time programs are available. These programs vary in accreditation. Massage therapy training programs are generally approved by a State board, and may also be accredited by an independent accrediting agency. In States that regulate massage therapy, graduation from an approved school or training program is usually required in order to practice. Some State regulations require that therapists keep up on their knowledge and technique through continuing education. After completion of a training program, many massage therapists opt to take the National Certification Examination for Therapeutic Massage and Bodywork (NCETMB). Many States require that therapists pass this test in order to practice massage therapy.

**Occupational Outlook:** Employment for massage therapists is expected to increase 20 percent from 2006 to 2016, faster than average for all occupations. Employment will grow as more people learn about the benefits of massage therapy.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9011	Massage Therapists	731	833	102	14.0%	10	8	18

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
-	-	-	\$19.16

## National Employment

United States	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
Massage Therapists	122,400	145,600	+19%	3,950

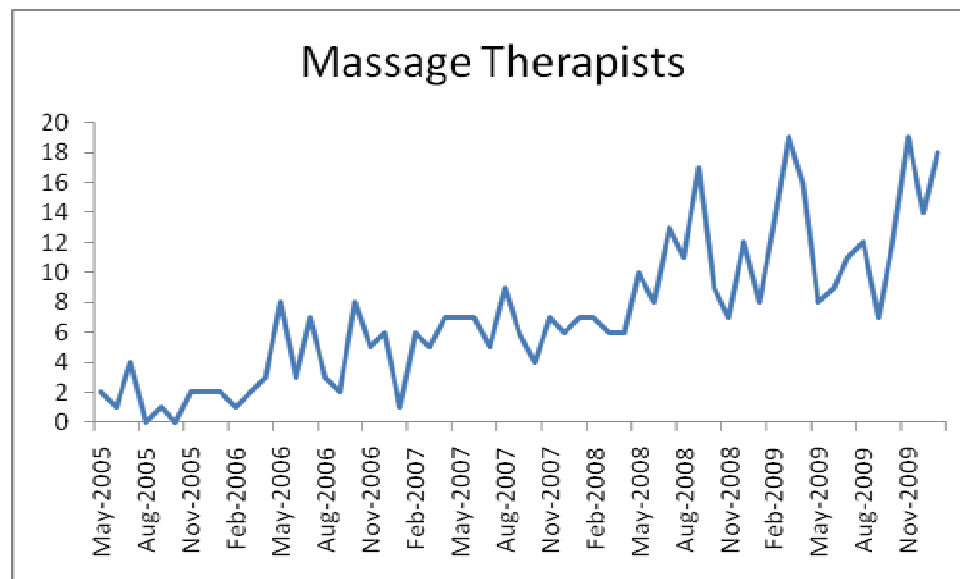
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.3501 Massage Therapy/Therapeutic Massage																
	Market Share		Completers													
		2003-04			2004-05			2005-06			2006-07			2007-08		
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award of less than 1 academic year																
1	Pierre's School of Cosmetology	7	29	36	7	34	41	3	24	27	5	22	27	2	25	27
2	Spa Tech Institute-Westbrook	5	32	37	2	24	26	13	77	90	12	46	58	8	66	74
	Subtotal	12	61	73	9	58	67	16	101	117	17	68	85	10	91	101
Award at least 1 but less than 2 academic years																
1	Intercoast Career Institute	0	0	0	0	0	0	0	0	0	0	4	4	3	9	12
2	Kennebec Valley Community College	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5
3	Seacoast Career Schools-Sanford Campus	2	11	13	5	38	43	9	67	76	6	38	44	1	35	36
	Subtotal	2	11	13	5	38	43	9	67	76	6	42	48	7	46	53
	Program Completer Total	14	72	86	14	96	110	25	168	193	23	110	133	17	137	154
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																
AMA Number of Programs				2		2		2		2						
AMA Number of Completers				0		42		42		42						
Source: AMA																

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9092.00 - Medical Assistants

**Occupation Description:** Perform administrative and certain clinical duties under the direction of physician. Administrative duties may include scheduling appointments, maintaining medical records, billing, and coding for insurance purposes. Clinical duties may include taking and recording vital signs and medical histories, preparing patients for examination, drawing blood, and administering medications as directed by physician.

**Sample of reported job titles:** Medical Assistant, Certified Medical Assistant (CMA), Doctor's Assistant, Medical Office Assistant, Optometric Assistant, Clinical Assistant, Ophthalmic Technician, Optometric Technician, Outpatient Surgery Assistant

**Educational Requirement:** Moderate term on-the-job Training. Postsecondary medical assisting programs are offered in vocational-technical high schools, postsecondary vocational schools, and community and junior colleges. Programs usually last either 1 year and result in a certificate or diploma, or 2 years and result in an associate degree. Courses cover anatomy, physiology, and medical terminology, as well as typing, transcription, recordkeeping, accounting, and insurance processing. Students learn laboratory techniques, clinical and diagnostic procedures, pharmaceutical principles, the administration of medications, and first aid. They study office practices, patient relations, medical law, and ethics. There are various organizations that accredit medical assisting programs. Accredited programs often include an internship that provides practical experience in physicians' offices, hospitals, or other health care facilities. Formal training in medical assisting, while generally preferred, is not always required. Some medical assistants are trained on the job, although this practice is less common than in the past. Applicants usually need a high school diploma or the equivalent.

**Occupational Outlook:** Employment of medical assistants is expected to grow 35 percent from 2006 to 2016, much faster than the average for all occupations. As the health care industry expands because of technological advances in medicine and the growth and aging of the population, there will be an increased need for all health care workers. Increasing use of medical assistants in the rapidly growing health care industry will further stimulate job growth.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9092	Medical Assistants	1949	2603	654	33.6%	65	24	89

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$11.04	\$15.40	\$13.94	\$13.97

## National Employment

United States	Employment		Percent	Annual Job Opening <sup>s 1</sup>
	2008	2018	Change	
Medical Assistants	483,600	647,500	+34%	21,780

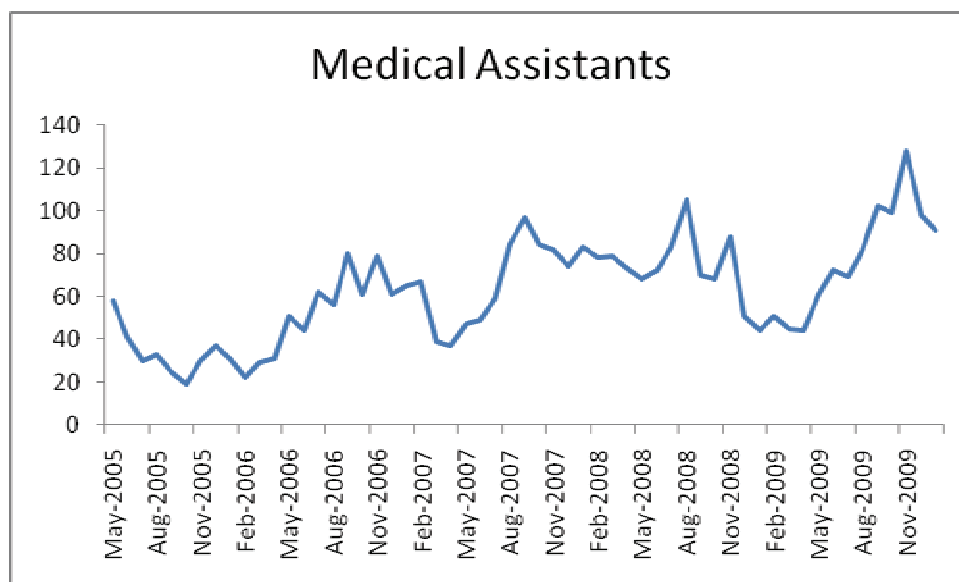
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0801 Medical/Clinical Assistant																		
Market Share		Completers																
		2003-04			2004-05			2005-06			2006-07			2007-08				
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total		
Award at least 1 but less than 2 academic years																		
1	Andover College	0	0	0	1	5	6	0	0	0	0	0	0	0	0	0		
2	Seacoast Career Schools-Sanford Campus	3	58	61	3	82	85	2	75	77	3	64	67	7	75	82		
3	Southern Maine Community College	0	0	0	0	2	2	0	5	5	0	3	3	0	0	0		
	Subtotal	3	58	61	4	89	93	2	80	82	3	67	70	7	75	82		
Associate's degree																		
1	Andover College	1	36	37	1	43	44	2	40	42	1	69	70	4	105	109		
2	Beal College	0	11	11	1	7	8	2	17	19	0	22	22	0	36	36		
3	Central Maine Community College	0	0	0	1	9	10	0	17	17	0	8	8	1	9	10		
4	Kennebec Valley Community College	0	13	13	0	11	11	1	17	18	1	14	15	1	12	13		
5	Southern Maine Community College	0	9	9	0	8	8	0	11	11	0	11	11	0	8	8		
6	Washington County Community College	0	2	2	0	1	1	0	16	16	0	7	7	0	15	15		
	Subtotal	1	71	72	3	79	82	5	118	123	2	131	133	6	185	191		
	Program Completer Total	4	129	133	7	168	175	7	198	205	5	198	203	13	260	273		
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																		
AMA Number of Programs				2			2			2			2					
AMA Number of Completers				13			36			32			32					
Source: AMA																		

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9093.00 - Medical Equipment Preparers

**Occupation Description:** Prepare, sterilize, install, or clean laboratory or healthcare equipment. May perform routine laboratory tasks and operate or inspect equipment.

**Sample of reported job titles:** Central Sterile Supply Technician (CSS Technician), Sterile Processing Technician, Central Processing Technician (CPT), Certified Registered Central Service Technician (CRCST), Sterile Preparation Technician, Sterile Processing and Distribution Technician (SPD Technician), Medical Supply Technician, Sterile Technician, Material Reprocessing Associate (MRA), Equipment Technician

**Educational Requirement:** Short-term on-the-job training

**Occupational Outlook:** No narrative for this occupation.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9093	Medical Equipment Preparers	226	259	33	14.6%	3	3	6

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$10.94	\$14.90	\$13.58	\$14.08

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
Medical Equipment Preparers	46,800	52,800	+13%	1,120

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

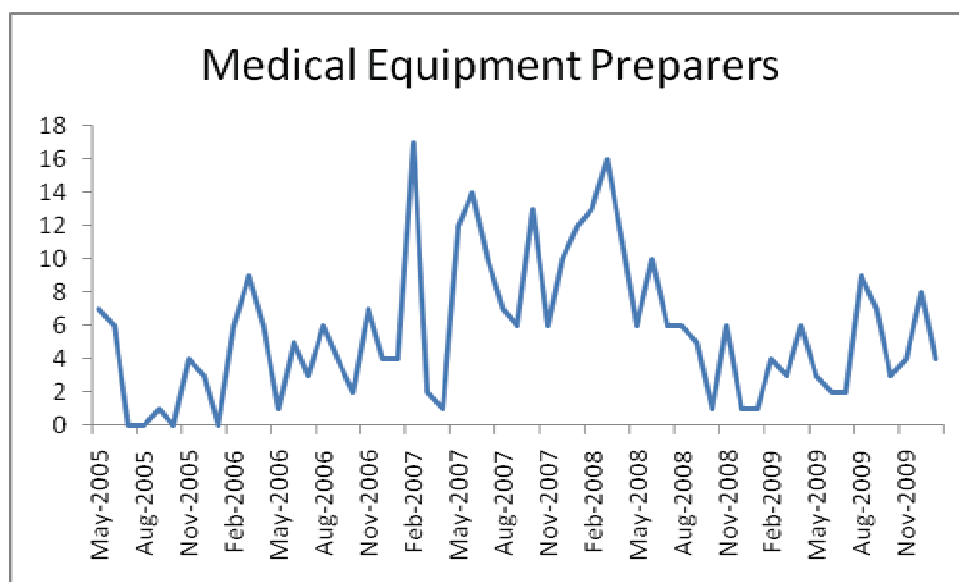
### Schools and Program Completers by Degree

No Schools in Maine.



## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9094.00 - Medical Transcriptionists

**Occupation Description:** Use transcribing machines with headset and foot pedal to listen to recordings by physicians and other healthcare professionals dictating a variety of medical reports, such as emergency room visits, diagnostic imaging studies, operations, chart reviews, and final summaries. Transcribe dictated reports and translate medical jargon and abbreviations into their expanded forms. Edit as necessary and return reports in either printed or electronic form to the dictator for review and signature, or correction.

**Sample of reported job titles:** Medical Transcriptionist, Transcriptionist, Radiology Transcriptionist, Medical Transcriber, Medical Language Specialist, Pathology Transcriptionist, Documentation Specialist, Medical Transcription Supervisor

**Educational Requirement:** Postsecondary Vocational Training. Employers prefer to hire transcriptionists who have completed postsecondary training in medical transcription offered by many vocational schools, community colleges, and distance-learning programs. Completion of a 2-year associate degree or 1-year certificate program—including coursework in anatomy, medical terminology, legal issues relating to health care documentation, and English grammar and punctuation—is highly recommended, but not always required. Many of these programs include supervised on-the-job experience. Some transcriptionists, especially those already familiar with medical terminology from previous experience as a nurse or medical secretary, become proficient through refresher courses and training.

**Occupational Outlook:** Employment of medical transcriptionists is projected to grow 14 percent from 2006 to 2016, faster than the average for all occupations. Demand for medical transcription services will be spurred by a growing and aging population. Older age groups receive proportionately greater numbers of medical tests, treatments, and procedures that require documentation. A high level of demand for transcription services also will be sustained by the continued need for electronic documentation that can be shared easily among providers, third-party payers, regulators, consumers, and health information systems. Growing numbers of medical transcriptionists will be needed to amend patients' records, edit documents from speech recognition systems, and identify discrepancies in medical reports.

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9094	Medical Transcriptionists	602	694	92	15.3%	9	8	17

## Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$11.98	\$16.77	\$15.17	\$15.84

## National Employment

United States	Employment		Percent	Annual Job Opening <sup>s 1</sup>
	2008	2018	Change	
Medical Transcriptionists	105,200	116,900	+11%	2,350

<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

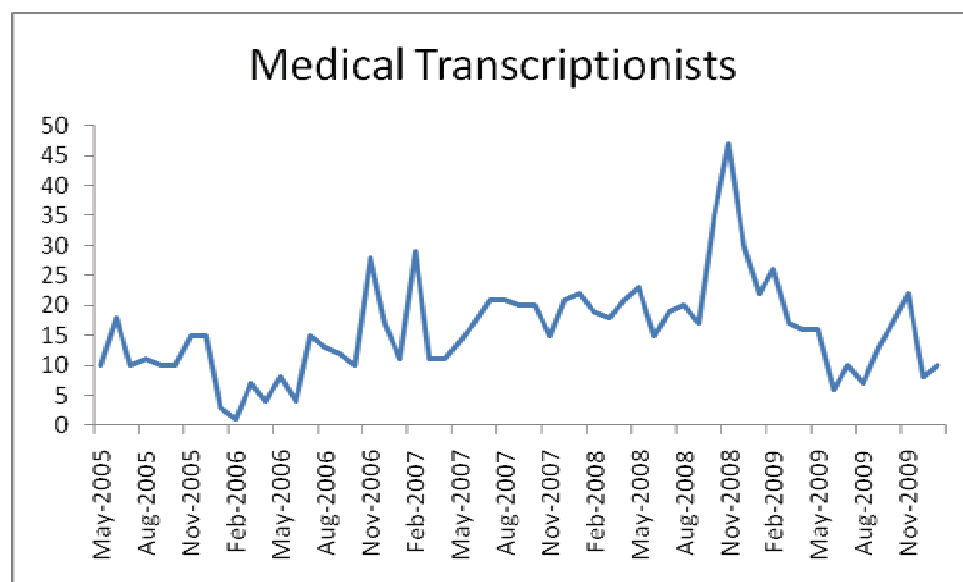
## Schools and Program Completers by Degree

Program of Study and Training: 51.0708 Medical Transcription/Transcriptionist																			
➡	Market Share				Completers														
					2003-04			2004-05			2005-06			2006-07			2007-08		
	School				M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total
Award at least 1 but less than 2 academic years																			
1	Beal College				1	18	19	0	17	17	1	13	14	2	20	22	0	10	10
2	Central Maine Community College				0	2	2	1	4	5	0	5	5	0	8	8	0	9	9
	Subtotal				1	20	21	1	21	22	1	18	19	2	28	30		19	19
Associate's degree																			
1	Eastern Maine Community College				0	3	3	0	7	7	0	6	6	0	6	6	1	3	4
	Program Completer Total				1	23	24	1	28	29	1	24	25	2	34	36	1	22	23
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																			

Source: National Center for Educational Statistics, Degrees Conferred 2004-08.

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## 31-9099.00 - Healthcare Support Workers, All Other

All healthcare support workers not listed separately

### Employment and Job Openings

Employment and Job Openings in Maine for 2006 and Projected 2016								
SOC Code	Occupation	Average Employment		Change in Employment		Average Annual Openings		
		2006	2016	Net	Percent	Growth	Replacement	Total
31-9099	Healthcare Support Workers, All Other	581	682	101	17.4%	10	7	17

### Occupational Wages 2008

Maine			US Mean
Entry Level	Experienced	Mean	
\$9.80	\$14.35	\$12.83	\$14.74

### National Employment

	Employment		Percent Change	Annual Job Opening <sup>s 1</sup>
	2008	2018		
United States				
All Other Healthcare Support Workers	200,600	235,000	+17%	5,670

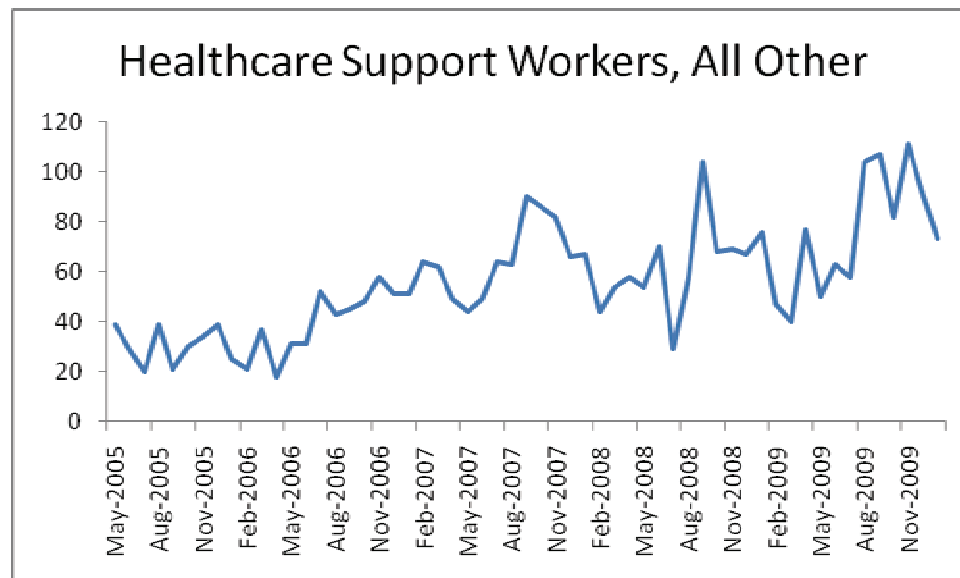
<sup>1</sup>Job Openings refers to the average annual job openings due to Growth and net replacement. **Note:** The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

## Schools and Program Completers by Degree

Program of Study and Training: 51.0000 Health Services/Allied Health/Health Sciences, General																	
Market Share		Completers															
		2003-04			2004-05			2005-06			2006-07			2007-08			
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Award at least 1 but less than 2 academic years																	
1	Kennebec Valley Community College	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	
Bachelor's degree																	
1	Saint Joseph's College of Maine	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
2	University of New England	6	57	63	7	43	50	7	36	43	3	31	34	2	31	33	
	Subtotal	6	57	63	7	43	50	7	36	43	3	31	34	2	33	35	
	Program Completer Total	6	57	63	7	43	50	7	36	43	3	31	34	2	38	40	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	
Program of Study and Training: 51.0999 Allied Health Diagnostic, Intervention, and Treatment Professions, Other																	
Market Share		Completers															
		2003-04			2004-05			2005-06			2006-07			2007-08			
	School	M	W	Total	M	W	Total	M	W	Total	M	W	Total	M	W	Total	
Bachelor's degree																	
1	University of Southern Maine	0	1	1	0	6	6	4	8	12	5	6	11	2	14	16	
	Program Completer Total		1	1		6	6	4	8	12	5	6	11	2	14	16	
Source: National Center for Educational Statistics, Degrees Conferred 2004-08.																	

## Help Wanted Online Job Advertisement Trend

Conference Board HWOL Data Series, Not Seasonally Adjusted, Active Ads Without Duplicates



## Appendix VII—Occupational Wage Statistics

Healthcare Occupational Wage Statistics for High Priority Occupations								
Ranked according to Pct. Difference between Maine and US mean wage								
Occupation	Mean Hourly Wage, 2008			Maine Wage Rank Vs. Other States	Maine Wage, # Std. Deviations from US Mean	Statistically Significant; * = Yes	StdDevUS- Pop	Employment
	Maine	USA	% Difference					
Dentists, General	\$86.9	\$74.2	17%	5	1.5	*	8.7	360
Psychiatrists	\$82.1	\$74.1	11%	18	0.7	*	12.1	130
Surgeons	\$108.8	\$99.4	9%	1**	1.4	*	6.7	390
Pharmacists	\$54.1	\$50.1	8%	2	0.9	*	4.6	1220
Obstetricians and Gynecologists	\$99.2	\$92.7	7%	16	0.6	*	11.2	140
Home Health Aides	\$10.8	\$10.3	4%	20	0.3	*	1.3	5350
Respiratory Therapy Technicians	\$21.9	\$21.0	4%	12	0.2		3.9	60
Physician Assistants	\$40.7	\$39.2	4%	16	0.3	*	5.4	730
Pediatricians, General	\$74.7	\$73.7	1%	26	0.1		10.2	140
Respiratory Therapists	\$25.4	\$25.6	-1%	18	0.0		3.5	540
Physicians and Surgeons, All Other	\$78.3	\$79.3	-1%	38	-0.1	*	10.9	1260
Surgical Technologists	\$18.5	\$19.3	-4%	27	-0.3	*	2.6	470
Nursing Aides, Orderlies, and Atten	\$11.3	\$11.8	-5%	27	-0.4	*	1.6	9710
Pharmacy Technicians	\$13.0	\$13.7	-5%	34	-0.4	*	1.7	1570
Family and General Practitioners	\$72.8	\$77.6	-6%	43	-0.5	*	8.9	740
Registered Nurses	\$28.6	\$31.3	-9%	29	-0.6	*	4.4	14050
Dental Hygienists	\$29.0	\$32.2	-10%	38	-0.6	*	5.4	1120
Physical Therapists	\$31.2	\$35.8	-13%	44	-1.1	*	4.3	970
Internists, General	\$73.1	\$85.0	-14%	45	-0.9	*	13.1	380
Anesthesiologists	\$79.1	\$95.0	-17%	34	-1.5	*	10.8	270
Radiation Therapists	\$30.1	\$36.3	-17%	38	-1.2	*	5.2	100
Speech-Language Pathologists	\$25.9	\$31.8	-19%	43	-1.4	*	4.2	710
Occupational Therapists	\$26.2	\$32.7	-20%	49	-1.9	*	3.5	630

\*\* 1st among the 38 states that reported information.

## Appendix VIII—Practitioners per Thousand Residents, Six Rural Counties, Maine

Practitioners per Thousand Residents			
	Six Rural Counties	Rest of Maine	LQ, 6 Rural Counties vs. Rest of State
<b>Healthcare Practitioners and Technical Occupations</b>			
Physicians and Surgeons, All Other	0.23	1.13	0.21
Dentists, General	0.08	0.32	0.24
Cardiovascular Technologists and Technicians	0.04	0.15	0.26
Surgical Technologists	0.12	0.42	0.28
Dental Hygienists	0.35	0.97	0.36
Speech-Language Pathologists	0.23	0.61	0.38
Medical and Clinical Laboratory Technologists	0.39	0.78	0.49
Anesthesiologists	0.12	0.23	0.51
Surgeons	0.19	0.32	0.60
Radiologic Technologists and Technicians	0.62	1.04	0.60
Pediatricians, General	0.08	0.11	0.68
Respiratory Therapists	0.31	0.43	0.71
Registered Nurses	8.21	11.27	0.73
Psychiatrists	0.08	0.10	0.75
<b>Healthcare Practitioners and Technical Occupation</b>	<b>22.7</b>	<b>28.6</b>	<b>0.79</b>
Physician Assistants	0.46	0.58	0.81
Physical Therapists	0.70	0.75	0.93
Pharmacists	0.89	0.94	0.95
Family and General Practitioners	0.54	0.57	0.96
Diagnostic Medical Sonographers	0.12	0.12	0.95
Medical Records and Health Information Technicians	0.58	0.59	0.99
Licensed Practical and Licensed Vocational Nurses	1.32	1.29	1.02
Dietitians and Nutritionists	0.19	0.19	1.03
Obstetricians and Gynecologists	0.12	0.10	1.12
Internists, General	0.31	0.28	1.09
Medical and Clinical Laboratory Technicians	0.58	0.53	1.1
Pharmacy Technicians	1.43	1.13	1.23
Occupational Therapists	0.58	0.45	1.28
Nuclear Medicine Technologists	0.08	0.06	1.37
Respiratory Therapy Technicians	0.08	0.04	2.05
Emergency Medical Technicians and Paramedics	2.01	0.70	2.88
Radiation Therapists	0.19	0.05	4.1
<b>Healthcare Support Workers</b>			
Healthcare Support Workers, All Other	0.19	0.42	0.47
Dental Assistants	0.43	0.88	0.48
Medical Equipment Preparers	0.12	0.20	0.59
Medical Transcriptionists	0.46	0.64	0.72
Home Health Aides	3.68	4.16	0.89
<b>Healthcare Support Occupations</b>	<b>3.68</b>	<b>4.15</b>	<b>0.90</b>
Nursing Aides, Orderlies, and Attendants	7.13	7.44	0.96
Medical Assistants	1.63	1.61	1.01
Physical Therapist Assistants	0.15	0.14	1.09
Physical Therapist Aides	0.23	0.09	2.46
Pharmacy Aides	0.46	0.10	4.47
Occupational Therapist Assistants	0.31	0.06	5.47

## Appendix IX—Occupational Wages, Six Rural Counties

Occupational Wages, Six Rural Counties Vs. Maine Average				
<i>Ranked according to Wage differential</i>				
Occupation	Mean Salary		% Difference, Rural Counties vs. Maine Avg.	LQ, 6 Rural Counties vs. Maine Avg.
	Rural Counties	Maine Avg.		
Dentists, General	\$58.6	\$86.9	-33%	0.28
Occupational Therapist Assistants	\$11.2	\$15.8	-29%	2.91
Occupational Therapists	\$20.3	\$26.2	-22%	1.21
Health Technologists and Technicians, All Other	\$17.3	\$21.2	-18%	0.64
Dental Assistants	\$13.5	\$16.3	-17%	0.54
Radiation Therapists	\$25.7	\$30.1	-15%	2.55
Medical Records and Health Information Technicians	\$13.0	\$15.1	-14%	0.99
Healthcare Support Workers, All Other	\$11.1	\$12.8	-14%	0.52
Medical Assistants	\$12.1	\$13.9	-13%	1.01
<b>Healthcare Practitioners and Technical Occupations</b>	<b>\$28.7</b>	<b>\$32.6</b>	-12%	0.83
Radiologic Technologists and Technicians	\$24.1	\$26.9	-10%	0.65
Licensed Practical and Licensed Vocational Nurses	\$17.2	\$19.1	-10%	1.01
<b>Healthcare Support Occupations</b>	<b>\$11.1</b>	<b>\$12.2</b>	-9%	0.92
Surgical Technologists	\$16.9	\$18.5	-9%	0.33
Registered Nurses	\$26.1	\$28.6	-9%	0.77
Medical Transcriptionists	\$14.0	\$15.2	-8%	0.77
Nuclear Medicine Technologists	\$29.8	\$32.4	-8%	1.28
Diagnostic Medical Sonographers	\$28.7	\$31.2	-8%	0.96
Nursing Aides, Orderlies, and Attendants	\$10.5	\$11.3	-7%	0.97
Dietitians and Nutritionists	\$21.5	\$23.1	-7%	1.02
Medical Equipment Preparers	\$12.7	\$13.6	-6%	0.64
Physical Therapist Aides	\$11.1	\$11.6	-4%	1.91
Surgeons	\$104.8	\$108.8	-4%	0.65
Physical Therapists	\$30.1	\$31.2	-3%	0.95
Pharmacy Technicians	\$12.6	\$13.0	-3%	1.20
Emergency Medical Technicians and Paramedics	\$13.2	\$13.6	-3%	2.10
Speech-Language Pathologists	\$25.2	\$25.9	-3%	0.43
Dietetic Technicians	\$13.7	\$14.1	-3%	1.50
Physician Assistants	\$40.1	\$40.7	-2%	0.84
Respiratory Therapists	\$25.2	\$25.4	-1%	0.76
Physical Therapist Assistants	\$19.7	\$19.8	-1%	1.07
Medical and Clinical Laboratory Technologists	\$24.9	\$24.9	0%	0.55
Dental Hygienists	\$29.2	\$29.0	1%	0.41
Home Health Aides	\$10.9	\$10.8	1%	0.91
Psychiatrists	\$83.0	\$82.1	1%	0.78
Pharmacists	\$54.8	\$54.1	1%	0.96
Family and General Practitioners	\$73.9	\$72.8	1%	0.96
Occupational Health and Safety Specialists	\$31.7	\$30.9	2%	1.02
Pharmacy Aides	\$10.5	\$10.2	3%	2.66
Medical and Clinical Laboratory Technicians	\$18.4	\$17.6	5%	1.08
Pediatricians, General	\$78.7	\$74.7	5%	0.73
Obstetricians and Gynecologists	\$104.7	\$99.2	5%	1.09
Internists, General	\$77.2	\$73.1	6%	1.07
Healthcare Practitioners and Technical Workers, All	\$26.7	\$25.1	6%	0.26
Respiratory Therapy Technicians	\$23.4	\$21.9	7%	1.70
Anesthesiologists	\$87.4	\$79.1	10%	0.57
Cardiovascular Technologists and Technicians	\$28.1	\$25.4	11%	0.30
Physicians and Surgeons, All Other	\$89.6	\$78.3	14%	0.24
<i>High Priority Occupations Highlighted in Yellow.</i>				



## Endnotes

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<sup>1</sup> North American Industry Classification System (NAICS) replaced the Standard Industrial Classification (SIC) system in 1997. CWRI converted SIC codes to NAICS in order to retrieve historical employment trends by sector back to the early 1990s.

<sup>2</sup> The high-priority occupations are defined on page six of this report.

<sup>3</sup> This analysis benchmarks the per capita supply of workers in Maine to that of the nation. As such, this analysis shows shortages of workers on a relative, not absolute basis.

<sup>4</sup> The 2006 Healthcare Occupations Report may be found at <http://www.maine.gov/labor/lmis/archives.html>

<sup>5</sup> Includes anesthesiologists, family and general practitioners, internists (general), obstetricians and gynecologists, pediatricians (general), psychiatrists, surgeons, and physicians and surgeons, all other.

<sup>6</sup> The Occupational Employment Statistics (OES) program has begun the multiyear process for reclassifying nurse practitioners, nurse anesthetists and nurse midwives into their own occupational categories. Estimates for these new SOC occupations are expected to be available in 2013.

<sup>7</sup> The category of direct care workers crosses several major occupational groups, one of which is healthcare. The direct care occupations within the healthcare group are home health aides and nursing aides, orderlies and attendants (includes CNAs). Direct care workers are also found in the Personal Care and Service Occupations (SOC: 39-0000). For the purposes of this report only the healthcare related direct care occupations (as defined by SOC) are assessed.

<sup>8</sup> Social workers are technically not healthcare occupational workers, at least according to OES. OES categorizes social workers in the major occupational category, Community and Social Services Occupations (SOC: 21-0000). As the focus of this report is on healthcare occupations as defined by OES (SOC: 29-000 and 31-000), social workers are not assessed.

<sup>9</sup> The Bureau of Economic Analysis (BEA) combines the hospital and nursing and residential care industries in its GDP accounts.

<sup>10</sup> North American Industry Classification System (NAICS) replaced the Standard Industrial Classification (SIC) system in 1997. CWRI converted SIC codes to NAICS in order to retrieve historical employment trends by sector back to the early 1990s.

<sup>11</sup> See Appendix III for detailed state level statistics.

<sup>12</sup> See Appendix III. Maine has only slightly (~two percent) more healthcare workers (per capita) than PA, OH and KS, but 10-21 percent higher per capita health expenditures. In figure 17, the data points that coincide with 39 to 40 healthcare workers per population fall along a continuum of per capita personal healthcare expenditures (PHCE) ranging from ~\$5,382 to \$6,540. Maine is the farthest to the right along this continuum, at \$6,540 PHCE.

<sup>13</sup> Maine's State Health Plan, page 21; April 2008.

<sup>14</sup> Office and administrative occupations represent 14 percent of Maine's healthcare sector employment. Community and social services, personal care and service, management, food preparation and serving, and other occupations represent 10, 8, 4, 4 and 11 percent, respectively, of this state's healthcare sector employment.

<sup>15</sup> Owners of unincorporated firms are not covered as well.

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<sup>16</sup> Statistics on the number of employed by healthcare occupation are not as reliable in the social assistance industry. This is due to the lower numbers of employed healthcare workers in this industry which creates larger standard errors.

<sup>17</sup> Excludes veterinarians and vet tech. See Appendix V for projected employment and job openings by occupation.

<sup>18</sup> This analysis excludes occupations that require on-the-job or vocational training.

<sup>19</sup> The Conference Board **Help Wanted Online™** Data Series, supplied by Wanted Analytics, represents “the number of number of new, first-time online jobs and jobs reposted from the previous month on more than 1,200 major Internet job boards and smaller job boards that serve niche markets and smaller geographic areas....Data in the HWOL data series reflects unduplicated ads.” /[www.conference-board.org/economics/helpwantedOnline.cfm](http://www.conference-board.org/economics/helpwantedOnline.cfm)

<sup>20</sup> The Physician Workforce: Projections and Research into Current Issues Affecting Supply and Demand by the U.S. Department of Health and Human Services, Health Resources and Services Administration does a good job of summarizing the various historical approaches to defining adequacy of physician supply.

<sup>21</sup> DHHS also designates geographic areas, population groups and medical facilities as healthcare practitioner shortage areas (HPSA) if certain criteria are met.

<sup>22</sup> Office of Shortage Designation, US DHHS

<sup>23</sup> Benchmarking the practitioner shortage estimates to national and state total employment estimates for those respective occupations yields an approximation of the shortage ratio for each field of practice.

Example:

In the US, 16,716 primary care physicians are needed to achieve target practitioner-to-population ratios, according to DHHS estimates. There were 233,000 total primary care physicians in the US in 2008 (this figure includes an adjustment to capture the number of self employed physicians. The Bureau of Labor Statistics (BLS) assumption for self employment in these occupations is 13 percent). These estimates can be put into a ratio which summarizes the degree of shortage for primary care physicians in the US. The shortage ratio for primary care practitioners in the US is 16,716/233,000 or 7.2 percent.

<sup>24</sup> Bureau of Labor Statistics (BLS) self employment assumptions for general dentistry is 26 percent; the Occupational Supply Demand System (OSDS) assumption is 36 percent. The weighted average BLS self employment assumption for the mental health category is 21 percent; the OSDS assumption is 16 percent. The self employment assumption for primary care practitioners is 13 percent, according to the BLS. OSDS does not provide occupational data on physicians.

<sup>25</sup> It is important to note that this is an aggregate analysis for the entire state of Maine and that the geographic distribution of workers in a particular occupation is not considered. As such, it is possible to show a surplus of workers (high LQ) on a statewide basis and still have a shortage of that occupation in certain regions. The distribution of occupations is addressed later in this report in the section titled, *Geographic Distribution of Maine's Healthcare Workforce*.

<sup>26</sup> US DHHS shortage statistics, for example, indicate that dentists are in a national shortage. If so, the dentist LQ ratio of .98 indicates that Maine has a shortage in this field roughly on par with that of the nation.

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In the same manner, the pediatrician LQ ratio of 1.06 may be indicative of a statewide shortage in this field given the national shortage of primary care physicians (see National and State of Maine Healthcare Practitioner Shortage Statistics, pages 36-39). The LQ ratios for the other primary care physicians (family and general practitioners, internists, obstetricians and gynecologists) reflect 50 to 100 percent more workers in Maine per capita than the nation, which in all likelihood offsets the seven percent shortage (DHHS Practitioner statistics) of primary care physicians across the nation.

<sup>27</sup> The health and demographic characteristics of a particular statewide population play a role in the number of practitioners required for adequate healthcare services. It may be the case that, given the health and demographic characteristics of a population, surpluses (or deficits) of practitioners in certain occupations (per capita) are required.

<sup>28</sup> The Supply/Demand Ratio, which is trademarked by Wanted Analytics, was devised as a means to “find which locations have the greatest hiring demand for an occupation or skill-set.” Data source for online job ads is The Conference Board **Help Wanted Online**™ Data Series (HWOL), supplied by Wanted Analytics. In this data series online job ads represent “the number of number of new, first-time online jobs and jobs reposted from the previous month on more than 1,200 major Internet job boards and smaller job boards that serve niche markets and smaller geographic areas....Data in the HWOL data series reflects unduplicated ads.” <http://www.conference-board.org/economics/helpwantedOnline.cfm>

<sup>29</sup> This is particularly the case in markets with universities that are producing newly trained professionals. States without a university system that produces healthcare practitioners will have to rely on help wanted advertisements more than others, all else equal. In terms of ad quality—some job ads may be more attractive (offer better pay and benefits) than others. In S/D analysis all ads are counted equally. S/D ratios also assume each state is an independent labor market and reflect a point in time only.

<sup>30</sup> Vacancy rate is defined as the number of vacant positions divided by the number of employed.

<sup>31</sup> Cost-of-living differentials are a significant factor as well. While there is no statewide cost-of-living index that is available to compare Maine to the nation, a number of sources provide cost-of-living data on a few of Maine’s cities. These statistics can be compared to other US city cost-of-living data. This data supports the general notion that the cost of living in Maine is at least, if not more than the national average. One recent study ranked the cost of living in a variety of cities compared to the national average. Portland, Maine registered with a cost-of-living that was 14% above national average and Bangor was equivalent to the national average. Source: [http://www.kiplinger.com/tools/bestcities\\_sort/](http://www.kiplinger.com/tools/bestcities_sort/)

<sup>32</sup> Only pharmacists in California earned more than Maine pharmacists in 2008. In 2008 pharmacists in California earned four percent more, on average, than pharmacists in Maine.

<sup>33</sup> Alaska was first. Dentists practicing in Alaska earned 12 percent more than Maine dentists per hour in 2008.

<sup>34</sup> See Appendix VII.

<sup>35</sup> Source: The Maine Labor Market: Trends and Issues, by Dana Evans. The analysis in this paper incorporates updated employment statistics. <http://www.maine.gov/labor/lmis/pubs.html>

<sup>36</sup> In the six rural counties there were 12 occupations that paid 10 percent or less than the average statewide wage for those same occupations. Six of these occupations had LQ ratios above 1, indicating oversupply versus the Maine average. Likewise, 20 healthcare occupations paid 5 percent less in the six rural counties vs. the statewide average wage for those occupations; 11 of these 20 occupations had LQ ratios of .96 or higher.

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<sup>37</sup> <http://nces.ed.gov/ipeds/>

<sup>38</sup> “The Classification of Instructional Programs (CIP) provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity. CIP was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980, with revisions occurring in 1985, 1990, and 2000.” <http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55>

<sup>39</sup> Every school selects the CIP that best matches their program. There are thousands of CIP codes in general and hundreds within the “Health Professions” category.

<sup>40</sup> This is due to the amount of class time as well as the fact that many vocational and adult education programs don't participate in federal student loan programs.

<sup>41</sup> Educational programs that are accredited by one of over 20 accrediting organizations. Not all health occupations are surveyed.

<sup>42</sup> “In addition, data from respondents to the 2006 survey and the 2005 survey were used for 922 and 440 nonresponding programs, respectively, for a total response rate of 78.3% (4,623 of 5,903 accredited programs surveyed in 2007).” Health Professions Education Data Book, 2008-2009. Published by The American Medical Association. Page 2.

<sup>43</sup> SMCC is pursuing accreditation and is hopeful to their self-study completed and submitted by year end.

<sup>44</sup> UNE also has a proposal for a new dental school.

<sup>45</sup> Other limiting factors of this analysis are:

- The use of total average annual job openings overstates expected demand for an occupation. Average annual job openings are a function of new and replacement job openings. Some portion of replacement job openings is due to normal turnover which doesn't necessarily require an incremental worker to fill that spot.
- Average annual job opening projections assumes *actual* job openings will be spread evenly over the forecast period, and this is not always the case. A variety of factors often cause job openings to be distributed differently than a straight average. As a practical example, if all the RNs that are going to retire in the next 10 years actually retire in the next three years, there will likely not be enough program completers to fill that gap. If those retirements are spread evenly over the 10 year period, the number of program completers would likely be sufficient, all else equal.

<sup>46</sup> For the purposes of this analysis, vacancy rates above the healthcare occupational average (3.5 percent) are considered high.

<sup>47</sup> The US DHHS has a physician requirement model which estimates the number of physicians required per capita for different age groups and by medical specialty. The Physician Workforce: Projections and Research into Current Issues Affecting Supply and Demand, US DHHS, HRSA, page 40.

<sup>48</sup> By way of reference, in 1990 and 2000, the median age in Maine was 3% and 9% above the US median age, respectively.

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<sup>49</sup> This analysis is based on a similar analysis done by US DHHS as described in The Physician Workforce: Projections and Research into Current Issues Affecting Supply and Demand; US DHHS, Health Resources and Services Administration, Bureau of Health Professions, December 2008, page 40.

<sup>50</sup> See appendix VI for more details on the MMC-Tufts Medical School program. Information may be found in the pages for physicians, and schools offered in the state.

<sup>51</sup> 2006 Maine Healthcare Occupations Report, by Matthew Kruk. Page 26.  
<http://www.maine.gov/labor/lmis/archives.html>

<sup>52</sup> US DHHS

<sup>53</sup> From OSDs. [http://www.occsupplydemand.org/OSD\\_UnitOfAnalysis.aspx?CLUSCODE=154B-08&ST=ME&PathNo=2](http://www.occsupplydemand.org/OSD_UnitOfAnalysis.aspx?CLUSCODE=154B-08&ST=ME&PathNo=2)

<sup>54</sup> <http://www.maine.gov/education/it/directory/hoes/cna.htm>