



# CONNECTICUT HEALTH CARE WORKFORCE ASSESSMENT

BY ROBERT HOLM,  
STEVE QUIMBY, AND  
JOHN DORRER

PREPARED FOR THE CONNECTICUT  
OFFICE OF WORKFORCE  
COMPETITIVENESS  
AND THE CONNECTICUT  
EMPLOYMENT AND TRAINING  
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JOBS FOR THE FUTURE

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# CONNECTICUT HEALTH CARE WORKFORCE ASSESSMENT



# EXECUTIVE SUMMARY

During the current economic downturn, health care has been among the few industries to maintain its overall levels of employment, even increasing employment in some places and fields. At the same time, health care reform has opened to question many future projections for the health care workforce. Other major factors driving change, including technology, new reimbursement practices, and other factors, combine to make this a vital time to examine Connecticut's rapidly changing workforce environment in health care—and to formulate recommendations for responding to emerging conditions.

## CHALLENGES

### **PRESSURES ON DEMAND AND SUPPLY**

While workforce shortages in health care have lessened recently, industry employment will continue to experience solid growth because of several long-term drivers of demand, particularly Connecticut's *aging population*. At the same time, the state will be hard pressed to keep the supply of health care workers on pace because of the aging workforce, the outmigration of young adults, and flat (and by some measures declining) student achievement in the long-term pipeline. It will be crucial to maintain investment in training for traditional occupations, including nurse and primary care physician, as overall demand continues expanding.

### **TECHNOLOGY AND BUSINESS MODEL INNOVATIONS**

Demand for new skills is emerging, driven by several factors. Recent advances in technology and new organizational models in the health care industry are creating demand for new and emerging occupations in health information technology and patient navigation. In addition, most traditional health occupations will require augmented and new skills in technology, problem solving, and customer management as technology and business models evolve.

## **LEGISLATIVE AND BUDGET CHANGES**

The challenges above will combine with new health care legislation and the intensification of budget pressures to accelerate change and introduce more uncertainty in the short term. This will demand still more nimble market responsiveness by various types of institutions. Yet communication among employers and education and training institutions is lower than desired, according to some employers, and academic institutions face barriers to acting quickly when they do see changes in demand.

## **COORDINATING COMPLEX CHALLENGES AND RESOURCES**

Connecticut possesses many valuable resources and initiatives for health care education and training, including a large number of strong institutions, and recent initiatives have laid a foundation for shared planning and action. However, the strategies of many institutions are as of yet uncoordinated. Major sectors of the health care industry face common workforce challenges that call for collaborative action. And while some sector and regional differences call for independent specialized action, there is much room for linked efforts that address cross-sector challenges.

## **FACILITATING AND IMPROVING THE CONSISTENCY OF MARKET ANALYSES**

The many sources of health care workforce information are not coordinated in a way that supports complete analyses or shared understanding and strategy development. The departments of Labor, Higher Education, and Public Health, as well as other public and private institutions, maintain data systems that are integrated to some extent but not adequately. Standardization and quality control issues affect the interoperability of data systems for frequent comprehensive analyses. New sources of information, like real-time labor market information, are not capitalized upon to gain new insights, cross check assumptions, or monitor rapid change.

## **RECOMMENDATIONS**

To meet these challenges, JFF's recommendations center on building Connecticut's capacity to continuously monitor, understand, and strategically respond to the state's growing and increasingly dynamic health care workforce demands. Part 4 provides further descriptions, along with recommendations specific to key stakeholders.

## **ORGANIZE HEALTH CARE WORKFORCE DATA FOR EFFECTIVE ANALYSIS AND PLANNING.**

Balancing Connecticut's supply of professional, technical, and support workers will require coordinating employers, professional groups, legislators, licensure bodies, and education and training providers. Foundational to this is gaining a shared understanding based on highly accessible intelligence about workforce supply and demand. No central data repository exists to pull all the relevant sources together, despite valuable state efforts to collect data for this large sector and the existence of several specialized research resources.

This fragmentation limits health care workforce planning and investments.

We recommend the construction and maintenance of an *Internet-based health care workforce portal* to permit efficient and effective access to health care workforce information. Available through this portal would be: employment and wage data; occupational projections; real-time job postings data; licensure and certification data; education and training supply data; and health care workforce research studies. With a modest investment and the assignment of a lead agency to spearhead this effort, a coordinated information strategy would serve the needs of many public and private decision makers who need to make choices and investments related to the health care workforce. Sustainable funding to make those modest investments is also critical for improved consistency in the data and to encourage consumer use in decision making.

## **DEEPEN EMPLOYER ENGAGEMENT AND SPEED RESPONSIVENESS.**

As health care employers and educators face accelerating change in technology and uncertainty in the health care system, they increasingly will need to rely on each other to keep up with shifting skills needs. Employer feedback indicates that while education institutions are addressing many of their traditional workforce needs, most of them also lack resources to respond quickly to the specialized and evolving skills demands that are projected for the coming years.

To build the capacity of health care employers and educators to respond, Connecticut should promote and train its institutions to use and apply findings from the health care workforce information portal JFF recommends. A leading-edge element of that portal is a system to report real-time data on job vacancies in order to cross-check traditional market assumptions and monitor rapid change in emerging occupations and skills demands. Faster response to this intelligence will require faster processes for approving and launching quality programs of study to meet new demands, perhaps allowing for a “Research and Development” level of approval for new courses and identifying effective organizational structures to support rapid change. Responsiveness can also be enhanced by promoting the use of online learning resources, as long as they are offered in tandem with expanded practical experience.

## **BUILD CAPACITY FOR BROADER COLLABORATION.**

This assessment supports the recommendations of the Allied Health Workforce Policy Board to develop a health care workforce plan that identifies targets for in-demand health care occupations and to post a health care workforce scorecard on a public website. An addition that some employers suggest is to now shift the state focus from research and planning toward strategy consolidation and advocacy for resources to implement the plans. This would require high-level facilitation and support for consensus building, as well as bringing additional advocates on board for implementation planning. The board should continue to play its unifying role for the industry’s workforce development, and effective sector groups, such as the Behavioral Health Collaborative, should be supported to organize in their arenas.

Among the advocates to include are economic and business groups that can bring additional resources and links to a politically potent priority in the current economy: business growth and job creation. Despite the potential for synergy, such stakeholders do not place a priority on health care jobs that is commensurate with the industry's contributions to Gross State Product. The Allied Health Workforce Policy Board should promote the importance of the health care sector to economic development and business association stakeholders. It should also engage with them in strategic planning for the growth of the sector, as well as with industry clusters that share related workforce needs. These include health information, insurance, biomedical lab, and diagnostic services, among others. These allies should also be involved in developing data tools about the health care workforce and learn about their potential uses in other industries.

## TAILORED STAKEHOLDER RECOMMENDATIONS

Recommendations tailored to particular stakeholders are included in Appendix I. These include recommendations for education and training providers in general, as well as for stakeholders influencing the four major industry subsectors convened in this research: hospitals; ambulatory care; nursing and residential care; and behavioral health. The importance of the nursing labor market, which cuts across all these subsectors, merited an additional set of recommendations.



# INTRODUCTION AND PURPOSE

During the current economic downturn, health care has been among the few industries that have maintained their overall levels of employment, with health care even increasing employment in some places and fields. At the same time, the passage of the Personal Responsibility and Affordable Care Act has opened many of the future projections for the health care workforce to question. Other major factors driving change include technology, new reimbursement practices, and challenges to the scope of practice laws for critical health care occupations. These factors combine to make now a vital time to examine Connecticut's health care workforce, with an eye toward policy and practice changes that respond to the rapidly changing health care and health care workforce environments.

This Connecticut Health Care Workforce Assessment is part of the Connecticut Workforce Investment Strategies in Health Care effort, organized by the Connecticut Employment and Training Commission in collaboration with the Allied Health Workforce Policy Board. These entities received a State Health Care Workforce Development Planning Grant to:

- > Produce a statewide health care workforce plan, including a short-term action plan and a statewide Health Care Workforce Scorecard;
- > Coordinate and streamline disparate health care workforce planning efforts and strengthen regional health care workforce planning processes; and
- > Identify opportunities to improve data-collection and data-sharing capacity.

These activities will support the development of uniform data collection across states regarding licensed health professionals. This assessment is part of the planning efforts aimed at determining and developing solutions to Connecticut's health care workforce issues.

The research for this report examined strengths, weakness, opportunities, and threats in the state's health workforce supply and demand to produce:

- > A health care workforce demand analysis;
- > A health workforce supply analysis;
- > A resource and program gap analysis; and
- > A set of health care workforce recommendations that take into account capacity building, supply-demand mismatches, and issues identified in relation to Connecticut's education and training system.

This research demonstrates advances over traditional labor market analysis in two areas:

- > **REAL-TIME DATA:** This research utilizes cutting-edge, real-time data on the labor market based on job postings over the past year. The data provide information on both jobs for which employers were actively advertising and the education and experience requirements for those jobs. While imperfect, these data offer a much earlier look at what is happening now in the labor market than do traditional sources of labor market information.
- > **INCLUSION OF BEHAVIORAL HEALTH:** Traditional labor market analyses often ignore behavioral health as a health care subsector. This is in part because behavioral health does not have its own NAICS code and so data are subsumed in other categories and not readily available. The development and implementation of research methodologies aimed at exploring the behavioral health workforce is an advancement in the field and it contributes to the understanding of this important subsector in Connecticut.

# METHODOLOGY

The guiding principle of JFF's "SWOT analysis"—Strengths, Weaknesses, Opportunities, Threats—is that no single data source or methodology will adequately address the labor market challenges Connecticut faces. To conduct the Connecticut health care SWOT analysis, we selected four health care industry subsectors for inclusion in all aspects of the research:

- > Hospitals;
- > Nursing and residential care facilities, including both traditional long-term care facilities and assisted living centers;
- > Ambulatory care, which includes doctor's offices, outpatient clinics, and home health care services; and
- > Behavioral health organizations, including both state and private employers.

The research began with a series of key stakeholder interviews and document reviews to identify possible additional informants. Secondary data were collected from the wide variety of sources outlined below, as well as from real-time job postings from Connecticut's health care employers. Focus groups and interviews were conducted with Connecticut health care employers in the four key industry subsectors, as well as with education and training providers that serve these employers.

## BACKGROUND STAKEHOLDER INTERVIEWS AND DOCUMENTATION REVIEWS

JFF conducted interviews with key stakeholders in a variety of areas. These interviews served three main purposes. First, the interviews helped the members of the research team enhance their understanding of the health care labor market in Connecticut and of issues related to labor market information in the state.

Second, they helped identify key respondents for participation in focus groups. Third, they helped target the focus group questions on the areas of most interest to participants. Stakeholder interviewees included:

- > Twelve leaders of key associations;
- > Ten education and training providers;
- > Three experts on Connecticut labor market information;
- > Four leaders from Connecticut's higher education system;
- > Five labor representatives;
- > Two experts in the behavioral health workforce; and
- > Three economic development stakeholders.

The research team also reviewed numerous reports, briefing materials, and other documentation provided by a wide range of health care workforce stakeholders in Connecticut. These materials have been incorporated into the final assessment to ensure that JFF has built upon, but does not duplicate, prior work.

## SECONDARY DATA ANALYSIS

The research team analyzed secondary data on industry and occupational trends in health care and data on education and training programs. Industry trend data for Connecticut on total state employment and regional employment were provided by the Connecticut Department of Labor, which the team combined with data from the ES-202 and Local Employment Dynamics datasets. An analysis of all these data was conducted to determine long-term trends in health care employment, critical industry sectors, and occupations in Connecticut, as well as occupational areas where significant growth is anticipated over the next six to eight years.

Data on education programs and completers come from the Integrated Postsecondary Education Data System (IPEDS) and the Connecticut Training and Education Planning System (TEPS). These data were analyzed to examine the current supply of training and education to meet the projected labor market demand for specific occupations, as derived from both secondary and primary data analyses.

## REAL-TIME LABOR MARKET DATA

This analysis takes advantage of newly available technology to measure occupational demand by collecting information on all online job advertisements. Burning Glass Technology's proprietary data-collection program identifies jobs from over 16,000 websites. These represent a full span of employers, from small to large and both public and private. This sample also includes information from traditional job-posting boards (e.g., Career Builder, Monster.com), newspapers, and individual company job boards. While there is no way to guarantee 100 percent coverage, this new data source provides strong coverage and closer-to-real-time data than do traditional labor market information sources.

The Burning Glass real-time data analysis examined job postings from January 1, 2010 to December 31, 2010. The firm analyzed six specific areas:

1. Demand for health occupations overall on a statewide basis in the last 12 months.
  - > Total demand from job postings for health care occupations
  - > Comparison total demand from job postings of all Connecticut occupations
  - > Demand for the top 30 health occupations
2. Job postings demand for behavioral health jobs on a statewide basis.
  - > Demand for the 100+ lay titles submitted by JFF as possible behavioral jobs
  - > Aggregation of those lay titles into SOC occupational codes
  - > Aggregation of those lay titles into categories recommended by JFF content experts
3. Job-posting information on the experience requirements and education, certification, and licensing requirements of the top 30 health occupations aggregated in the state.
4. The industry distribution of health care jobs overall by three-digit SOC industry subsectors (ambulatory care, hospitals, and nursing and residential care) and the behavioral health category within the health care and social assistance NAICS Industry group.<sup>1</sup>
5. Total national demand in the last six months for the 30 top health care occupations in Connecticut for use in calculating supply/demand ratios based on OES national and state data.
6. Demand for health care jobs by county, Workforce Investment Area, and NAICS code.

*See the Appendix III for these analyses.*

The three main industry subsectors and their occupations were identified by traditional methods using NAICS industry codes and OES occupational codes. The behavioral health sector is not identified by a single NAICS code, and many of its occupations cross over with non-behavioral health occupations. Many of the occupations also lack standard titles and descriptions within the industry. The JFF research team and Burning Glass Technologies worked with Yale University's Dr. Michael Hoge and Dr. Jessica Wolf to identify job titles and search terms to improve the capture of behavioral health job postings.

## INDUSTRY FOCUS GROUPS

The primary data collection conducted in this research centered on a series of focus groups. Focus group questions helped the research team develop an understanding of how Connecticut health care employers recruit, train, and retain their talent, the nature and extent of their human resources investments, what they perceived to be the strengths and limitations of the public workforce investment system's engagement in health care, and what gaps they felt existed in the state and regional talent development systems. Each focus group included six to twelve business representatives. We conducted two focus groups

in each of three industry subsectors: hospitals, nursing and residential care facilities, and behavioral health. We conducted an additional small group discussion in the nursing and residential care facilities subsector. For ambulatory care, we conducted one focus group, focused on community health centers. Because of the difficulties encountered in scheduling further ambulatory care focus groups, the remaining information for this sector comes from interviews with ambulatory care employers in the home health care and physician's practice subsectors.

## EDUCATION AND WORKFORCE SYSTEM INTERVIEWS AND FOCUS GROUPS

The research team conducted interviews with ten health care education and training program providers, including community college and university deans and representatives from the Connecticut Technical High School System and proprietary training program providers. The research team also conducted a focus group with key leaders in health care from the state's five Workforce Investment Boards. The WIBs are both key players in the state's labor exchange system and funders of health care training programs for low-income, dislocated, and incumbent workers.

## CAVEATS

Care must be taken in interpreting the results of any research and in using those results in formulating recommendations. In considering the results of this research and the recommendations derived from it, we offer these specific caveats.

- > Although we took care to obtain focus group participants from across the state of Connecticut, there was an over-representation of employers and other key stakeholders from the state's central and more urban regions. This may add a bias to the results.
- > Participation in the focus groups and employer interviews was based on self-selection to some extent. We widely distributed invitations to participate, but only a small portion of those invited were available and willing to participate. It is possible that participants differ in some relevant way from those who were unable or chose not to participate.
- > The real-time data collection from Internet job postings included scans of over 16,000 websites and 234,000 job postings and included the use of recent Internet "spidering" technology, as well as processes of de-duplication and auto-coding to classify occupations and, to a lesser extent, industries. Yet the data rely on job postings created by thousands of individuals with little standardization. Over 99 percent of the job titles have an occupation code. Approximately 85 percent of codings produced through our proprietary auto-coder are accurate at the two-digit SOC level; 70 to 75 percent are accurate at the eight-digit level.
- > Industry data are less reliable. Over 30 percent of job postings do not contain an employer name. By combining use of company name where available with artificial intelligence algorithms to infer industry from company descriptions within the text of the job posting, we could assign an industry code to 85 percent of the postings. These codes are 75 percent accurate at the two-digit level and 65 percent accurate at the four-digit level.

- > Posting habits among employers affect the volume of those counted. For instance, some employers indicated that they continuously post advertisements for nurses, even when no positions are currently open. Thus, employers in regional follow up meetings thought that the nurse postings counts for the year were much higher than expected. Job postings also often appeared without stating education and experience requirements, although industry workers commonly assume such requirements implicitly.

*See Appendix III for more detailed methodology on the Burning Glass real-time vacancy data.*

# PART 1.

# CONNECTICUT'S HEALTH CARE WORKFORCE DEMAND

## OVERALL DRIVERS OF DEMAND

Growth in health care spending, the adoption of new technologies, shifts in health care policy, and major demographic changes will all impact the demand for health care workers in Connecticut over the next several years and beyond. Although the economic downturn has slowed growth in health care spending, most of these workforce trends are long term and will have far-reaching effects.

## HEALTH CARE SPENDING

A fundamental driver of the growth in demand for health care workers in Connecticut, as for the nation, is the growth in spending for health care services. U.S. health care spending has increased steadily over the past half-century, rising from 5 percent of the Gross Domestic Product in 1960 to 16 percent in 2008 (second only to East Timor among all United Nations countries). This spending was projected to jump further in 2009, to over 17 percent of GDP, making it the largest one-year increase in history (simultaneous with a 1.1 percent decline in GDP for the year).<sup>2</sup> The U.S. Health and Human Services Department expects the health care share of GDP to continue to rise, reaching nearly 20 percent by 2017.<sup>3</sup>

- > In 2009, national health expenditures grew 4.0 percent, to \$2.5 trillion—or \$8,086 per person—and accounted for 17.6 percent of GDP.
- > In 2004, the highest per capita health care spending among the states occurred in Massachusetts, Maine, New York, Alaska, and Connecticut, with spending 20 percent or more above the U.S. average.<sup>4</sup>

While the most dramatic effects of the recession did not immediately reach the health care sector, the shrinking economy eventually did affect the industry, particularly in regard to private health insurance spending. Growth in private health insurance spending slowed after 2009, as millions of workers lost their employer-based insurance coverage and delayed treatment. Medicare spending increases, driven by higher



unemployment, offset the decline in private spending.<sup>5</sup> However, the overall result has been slower growth in demand for skilled workers, according to Connecticut employers interviewed for this assessment.

### Subsector Spending Comparisons: Connecticut and the United States

Within the expanding U.S. health care industry, the largest share of spending is for hospital care, followed by physician care and other professional services (see *Table 1*). Together, these subsectors make up over half of health care spending. Pharmaceuticals and nursing home care are the next largest subsectors in terms of spending. Based on the most recent comparable data, Connecticut's spending pattern is similar to that of the nation. However, the state devoted a larger share to nursing home care by the mid-2000s than did the United States as a whole, and a slightly smaller share to hospital care.

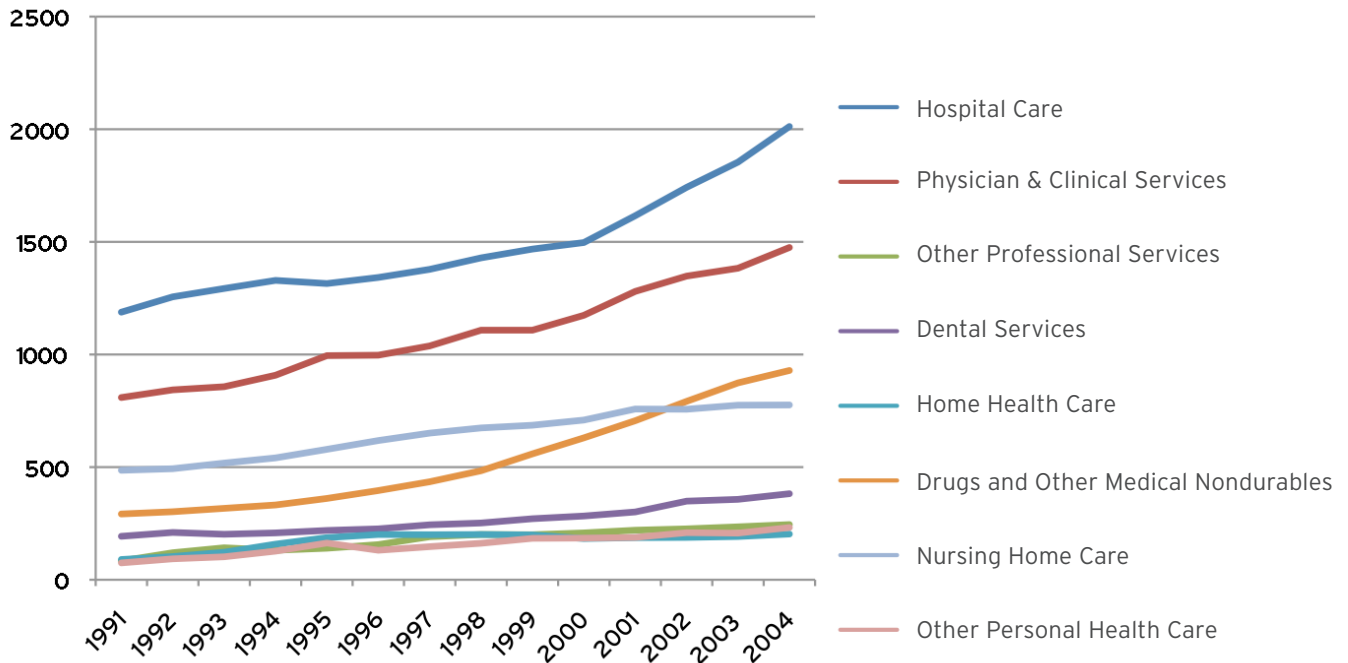
**TABLE 1.  
HEALTH CARE EXPENDITURES BY SERVICE, 2004  
(MILLIONS OF DOLLARS)**

	CONNECTICUT		UNITED STATES	
Hospital Care	31.7%	\$7,029	37.7%	\$566,886
Physician and Other Professional Services	27.1%	\$6,010	28.2%	\$446,349
Drugs and Other Medical Nondurables	14.6%	\$3,246	13.9%	\$222,412
Nursing Home Care	12.2%	\$2,711	7.4%	\$115,015
Dental Services	6.0%	\$1,336	5.2%	\$81,476
Home Health Care	3.2%	\$708	2.3%	\$42,710
Medical Durables	1.4%	\$317	1.5%	\$23,128
Other Personal Health Care	3.7%	\$810	4.0%	\$53,278
<b>TOTAL</b>	<b>100.0%</b>	<b>\$22,167</b>	<b>100.0%</b>	<b>\$1,551,255</b>

*SOURCE: Health Expenditure Data, Health Expenditures by State of Residence, Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group, released September 2007. Available at <http://www.cms.hhs.gov/NationalHealthExpendData/downloads/res-us.pdf>*

While spending in all categories of health care in Connecticut have risen, hospital care, ambulatory care, and pharmaceutical spending have increased the fastest since the early 1990s (see *Figure 1 on page 10*). Pharmaceutical spending overtook nursing home care spending in the early 2000s, although private nursing home construction and operations expanded rapidly in the mid-2000s. The state's per-capita spending growth stems primarily from the aging of Connecticut's population: older residents require more nursing home care and home-based care than do younger residents, as well as more medications and other health services in general.

**FIGURE 1.  
CONNECTICUT PER CAPITA HEALTH CARE EXPENDITURES**



### Public vs. Private Spending

Medicare, Medicaid, and other government programs account for a large share of health care spending, although these have grown more slowly than private insurance. Medicare per capita spending grew at an average of 6.8 percent annually between 1998 and 2008, while private health insurance spending grew at 7.1 percent per year on average.<sup>6</sup> More recently, the effects of unemployment, along with the enrollment of aging baby boomers in Medicare, have tilted the balance of health spending toward public dollars. Some researchers expect the growth of public spending for hospital care, physician and clinical services, and prescription drugs to exceed the growth of private spending for these services in 2011. By 2012, they project, public spending will account for more than half of all U.S. health care spending.<sup>7</sup>

- > Medicare spending grew 7.9 percent in 2009, to \$502.3 billion (20 percent of total national health expenditures).
- > Medicaid spending grew 9.0 percent, to \$373.9 billion (15 percent of total national health expenditures).<sup>8</sup>

### MERGERS, PARTNERSHIPS, AND BUSINESS MODEL CHANGES

While Connecticut traditionally has had proportionately more small health care providers, particularly small physician offices, than have other states, increasing financial pressure is leading to mergers, partnerships, and new business models across the state, as it is across the country. Twenty percent more U.S. hospital mergers occurred in the third quarter of 2010 than in the same period in 2009, according to the private consulting firm Irving Levin Associates of Norwalk, Connecticut. The firm anticipates that health care companies will continue to merge to achieve economies of scale.<sup>9</sup>

Physicians and hospitals also are partnering in greater numbers. Many of the physicians are joining larger health systems in order to manage bundled payments more efficiently and to work with Accountable Care Organizations under development by the Centers for Medicare and Medicaid Services.<sup>10</sup> These trends will increase demand for workers with “patient navigation” skills, as well as skills in medical billing, health information technology, and other management, customer service, and administrative areas. These changes also will require additional training of current and new health care workers.

At the same time, increasing pressures to control health care costs and insurance reimbursement rates could dampen employment growth across the industry. Innovations in health care service delivery—including the expansion of walk-in clinics and health service centers embedded in pharmacies and retail stores—also may change the types of entities providing health care services. Policymakers and workforce analysts will need to monitor these innovations and market developments if they are to anticipate worker demand accurately.

## **TECHNOLOGY AND HEALTH INFORMATION SYSTEMS**

Health care organizations are adopting advances in information technology to improve productivity, research, learning, and customer care. The multiple levels of health information technology—from electronic recordkeeping to digital communication, Web-based health information, and remote diagnosis tools—are empowering clinicians and patients alike to make more collaborative and better informed decisions based on real-time information. Moreover, the resulting explosion of health data is transforming the breadth and pace of clinical research and analysis to inform further advances.<sup>11</sup>

Other technology shifts are affecting the industry as well. For example, the development of automated medical labs in hospitals has dramatically changed the job of hospital medical technologist. With such advances, health care organizations and employees face growing pressure to identify and learn new skills to adapt to the rapid technological changes. Connecticut health care employers report anxiety about their workers’ readiness to adopt new technologies and keep pace with change. At the same time, employers hope that the adoption of new technologies will help them reduce costs and improve services. They also hope that younger workers more comfortable with technology will ease the transition. However, these changes will place a burden on education and training providers to purchase new equipment and develop new curricula to keep up with technological change, requiring significant investments.

## **POLICY ENVIRONMENT**

The above assessments are based primarily on current data and direct employer and educator feedback about workforce demand and supply, rather than on predictions of the impact of complex proposals for policy change. However, major public policy issues—such as changes in the health insurance industry and the 2010 passage of the Patient Protection and Affordable Care Act—are clearly on the minds of the stakeholders interviewed. Given the likelihood of significant state and federal policy changes—and their expected impact on demand for specific worker skills—these areas must be monitored.

## The Patient Protection and Affordable Care Act

The act almost certainly will have a dramatic impact on health care occupations over the next three to five years. However, there is uncertainty surrounding the details of the act's implementation, so its precise effects are unclear. That said, the centrality of health information technology and a move toward electronic medical recordkeeping are likely to drive increased employment in information technology positions in all of the critical health care sectors.

Similarly, although the specifics and workforce consequences of the medical home model and Accountable Care Organizations are still emerging, both are likely to significantly affect health care employment. ACOs will certainly heighten the emphasis on performance and productivity measurements for providers, which will likely increase demand for health care information professionals. The question is the extent to which current practitioners will be retrained with these skills or new occupations will be created and staffed by specialists. Given that the purposes of ACOs are to increase efficiency and reduce the cost of care, it is also entirely possible that their implementation may depress the growth of health care employment.

## Health Information Technology

Many health care providers are implementing health information technology systems to improve efficiency and the quality of care, and policy changes have begun to accelerate this shift, thus increasing the need for workers with strong IT skills. The federal government has further stimulated demand by funding multiple grants to pilot and promote the use of interoperable health records systems. Connecticut is following suit with the implementation of Health Information Exchanges, "E-Health Connecticut," and, potentially, the Sustinet strategy proposed for Medicaid customers and state employees. The impact of such policies will require new partnerships between educators and health care providers, as well as an examination of how much of the demand for new skills will be met through retraining incumbent workers versus training new workers. Some analysts expect these pressures to encourage more doctors to join larger practices in order to share the costs of IT and administrative tasks.

## Patient-Centered Medical Home

The Patient-Centered Medical Home model, a federal effort that Connecticut Governor Dannel P. Malloy is backing with pilots among a few small providers, will contribute to the need for health IT skills and training. It also will increase demand for skills in care planning, coordination, and patient education, particularly among workers taking on the role of "patient care coordinators/navigators." It has yet to be determined whether these coordinators should be Registered Nurses or have particular experience or connections with the local community. But it is clear that the job will require individuals with new customer, information, and management skills. There also will be an impact on employer organizational structures: small practices will have more difficulty than larger ones in absorbing the medical home functions that may be expanded.

## Broadening Medical Insurance Coverage

Policy changes that are expected to expand the number of Connecticut residents covered by medical insurance also will increase workforce demand. For instance, when more of the previously uninsured are covered, demand may increase for the services of community health centers, which typically serve large numbers of lower-income and minority residents. Health centers report higher demand for case managers than do other providers, along with a greater need for culturally competent care skills among all workers.

## Long-term Care Rebalancing Toward Home Care

According to long-term care advocates, about 60 percent of Medicaid spending in the long-term care subsector goes to nursing homes, and 40 percent is devoted to home-based care. Because home care costs less per person, approximately 54 percent of consumers are served in that setting. A goal of the Connecticut Commission on Aging and other advocates is to serve 75 percent of people in the home, and Connecticut has joined a \$56 million federal demonstration project, “Money Follows the Person,” that seeks to give states incentives to transition more people from nursing homes to home care.

However, the situation remains in flux. Moreover, it is difficult to find accurate measurements of home care employment because the variety of contract types and “off book” arrangements between patients and service providers complicate the calculations.

One implication of the move toward home care is the challenge of training practical Certified Nursing Assistants. Most new CNAs are trained in nursing home facilities, with an experienced nurse overseeing up to eight trainees. This kind of supervision is not typically available in a home care environment, suggesting the need for another model for training and mentoring home health workers.

In addition, the demand for home-based workers is more difficult to measure than demand for institutional employees because many are hired directly by the customer and are subject to fewer reporting requirements. The difficulty in classifying and providing basic training for Personal Care Assistants—many who have formal training as a CNA and whose duties overlap but differ from those of CNAs—also will increase as a result of the shift toward home care. Workforce and community college leaders are working to address the PCA educational challenge, potentially by creating certificates requiring very short-term training.

While there are indications of the likely impact of some public policy changes on demand for new skills, other policy proposals present less certain outcomes. Stakeholders have cited the move toward “Prior Authorization” and the Affordable Care Act’s Accountable Care Organizations as concerns, and well as the federal government’s plans to raise Medicaid reimbursement rates by 2014. At the state level, budget problems worry providers, although Governor Malloy is expected to avoid deep cuts in health care and to maintain a “health care safety net.”

## DEMOGRAPHICS

### Aging Population

New England states have fewer young adults (ages 25 to 34) relative to the general population than does the rest of the country (see *Table 2*). In fact, the percentage of young people in each New England state falls below the U.S. average (13.5 percent), and all New England states except Massachusetts rank in the bottom 10 in the percentage of total population in this cohort. New England appears to have relative difficulty attracting and retaining younger people, and this will affect health care supply and demand needs as the population ages.<sup>12</sup>

**TABLE 2.  
CONNECTICUT POPULATION, 2000-2030**

AGE	2000		2030		CHANGE 2000-2030	
	NUMBER	PERCENT OF POPULATION	NUMBER	PERCENT OF POPULATION	CHANGE	PERCENT CHANGE
65+	470,183	13.8	794,405	21.5	324,222	69
45-64	789,420	23.2	852,893	23.1	63,473	8
25-44	1,032,689	30.3	935,506	25.4	-97,183	-9
18-24	271,585	8.0	282,390	7.7	10,805	4
Under 18	841,688	24.7	823,436	22.3	-18,252	-2.2

SOURCE: U.S. Bureau of Census, <http://www.census.gov>

Older citizens, especially those over age 65, tend to use much higher levels of medical services than do their younger counterparts, so the rapid aging of the population will continue to drive demand for medical services. One bellwether of this dynamic is the demand for physician services by age group, outlined by the Health Resources and Services Administration (see *Table 3 on page 15*).

These data are consistent with national projections that demand for physicians and Registered Nurses will increase over the next decade because of the aging of the population.<sup>13</sup> In 2000, physicians spent an estimated 32 percent of patient care hours serving the age 65 and older population, a figure that is projected to increase to nearly 40 percent by the end of the decade. As the health workforce ages along with the state's general population, and the proportion of young people continues to decline, it raises concerns about the ability of a shrinking workforce to keep up with projected increases in demand.

### Minority and Foreign-born Populations

By 2020, the percentage of total patient care hours physicians spend with minority patients is projected to rise from 31 percent in 2000 to 40 percent.<sup>14</sup> Meanwhile, research suggests that Hispanics and non-whites have different patterns of health care use compared to white residents, and demand for health care services by minorities is increasing as the state's minority population grows.

**TABLE 3.  
ESTIMATED REQUIREMENTS FOR PATIENT CARE PHYSICIANS PER  
100,000 POPULATION, BY PATIENT AGE AND PHYSICIAN SPECIALTY,  
2000**

PATIENT AGE	PRIMARY CARE	MEDICAL SPECIALTIES	SURGERY	OTHER CARE	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
<b>ALL</b>	<b>95</b>	<b>33</b>	<b>55</b>	<b>70</b>	<b>253</b>

SOURCE: <http://bhpr.hrsa.gov/healthworkforce/reports/physicianworkforce/requirements.htm>

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

Connecticut's immigrant population is growing as well. According to the U.S. Census Bureau, 12.5 percent of Connecticut's population is foreign born, the 12th highest proportion in the nation.<sup>15</sup> A large proportion of individuals who are leaving the state are being replaced by immigrants from other countries. Immigrants of all skill levels can and do help to fill gaps in the health care workforce, but many require intensive support services and customized training programs. Language barriers and cultural, economic, and educational differences all impact these needs.

## INDUSTRY SUBSECTOR DEMAND

### WHAT DO THE DATA TELL US?

No one source of data can reliably answer the more detailed questions facing subsectors of the health care industry. This assessment has made use of multiple data sources as well as direct dialogue with employers to cross check assumptions and conclusions that might be suggested in one source. The data below derive from both traditional occupational projections of the sort typically available to state labor market information offices, as well as from real-time job-posting data that capitalizes on recent technology advances to analyze the content of online job advertisements. To this data review, we add intelligence gathered from structured conversations with employers.

#### Traditional Projections

Four major subsectors make up the Connecticut health care industry: ambulatory health care services; hospitals; nursing and residential care facilities; and social assistance.<sup>16</sup> Together, these sectors reported average employment of 261,786 in 2008. Industry projections for 2018 indicate this figure will rise to 298,913, an increase of 14 percent (37,117 jobs).

Ambulatory health care is projected to add nearly 13,000 jobs during this period, an increase of 16 percent. Hospitals are projected to add more than 6,500 jobs, an increase of nearly 10 percent. Nursing and residential care facilities are projected to add 6,387 jobs, and the social assistance sub-sector is expected to add 11,300 jobs.

These projections assume growth rates similar to those of recent years. However, a number of factors could significantly affect actual job growth in the health care industry and its subsectors. Demographic shifts, including the aging of the population, will continue to increase demand for health services such as nursing and residential care. Growth in chronic diseases, such as obesity and diabetes, are generating increasing demand for health services, including ambulatory care and hospitalization. The combination of these factors may increase worker demand in these subsectors.

Conversely, pressure to control health care costs and limit reimbursement rates may have the opposite effect. Innovations in health care services—such as the growth in the number of walk-in clinics and of health services embedded in pharmacies and other retail stores—may shift the locus of some health care employment. Policymakers and health care workforce analysts will need to stay abreast of innovations and market developments.

### **New Hires and Turnover**

New data systems cooperatively developed by states and the U.S. Census Bureau provide a deeper look at employment dynamics, including hiring volume and worker separations. In Connecticut, over 100,000 new hires were reported in 2000 across the four major health care subsectors. In 2009, at the bottom of the economic downturn, some 81,100 hires—or 31 percent of 2008 employment—filled new positions and replaced workers who left the industry. “New hire rates” (2009 new hires as a percentage of 2008 employment) ranged from a high of 51 percent for the social assistance sector to 11 percent for hospitals. The rates were 33 percent for ambulatory health care services and 31 percent for nursing and residential care facilities. These rates reflect a steady increase in the provision of services outside hospitals, shifting hiring activity to the ambulatory care subsector.

The growing proportion of elderly residents will further stimulate hiring in nursing and residential care facilities. However, the growth in long-term care employment will shift somewhat toward home care, a change that is taking shape in Connecticut and the nation. This trend is not apparent using traditional labor market information tools because many home-care nurses are hired as contractors in new business models or directly (and often off the books) by patients and their families in an informal market.

While Connecticut’s health care industry reported consistent employment increases over the past decade, significant numbers of workers left the industry each year, contributing to job churning (typically measured as an average of the number of new workers and the number leaving.) In 2000, more than 181,000 workers left the industry, and over 97,000 workers left in 2009. The tough economy in 2009 certainly contributed to higher rates of worker retention across all four subsectors, but recovery should lead to a gradual resumption of the previous level of churning. This will require education and training program providers to not only take account of future demand spurred by new growth but also recognize the relatively instability of the health care workforce as a driver of demand.



## Real-time Job Postings

Another way to gauge employment demand is to look at the hiring intentions of employers. Real-time job postings aggregated from the Internet provide an indication of the number of jobs that employers are seeking to fill. For 2010, the four major health care subsectors reported a total of 16,239 job postings (see *Table 4*). Ambulatory health services accounted for 8,531, or over half of total postings; hospitals reported 4,381 job postings, or 27 percent of all postings; nursing and residential care facilities reported 2,538 job postings, or 16 percent of the total; and social assistance reported 789 job postings.

This relatively new data series, which is based on private rather than the traditional public sources of data, provides an innovative means to track employment developments. However, the data must be interpreted with caution: neither all open jobs nor all company recruitment efforts appear in these figures. (See the *occupational analysis sections of this paper for a more detailed analysis of Internet job postings.*)

**TABLE 4.  
OCCUPATIONAL DEMAND MEASURES:  
TOP 30 HEALTH OCCUPATIONS, BY PROJECTED OPENINGS**

							Real Time
OCCUPATIONAL GROUP/ OCCUPATION TITLE	2008 EMPLOYMENT	2018	ANNUAL OPENINGS 2008-18	GROWTH	REPLACEMENT	PERCENT DUE TO REPLACEMENT	TOTAL POSTINGS 2010
Registered Nurses	36,715	42,049	1,174	533	641	55%	8,668
Home Health Aides	13,600	18,248	600	465	135	23%	383
Nursing Aides, Orderlies, Attendants	25,835	27,767	450	193	257	57%	647
Licensed Practical and Licensed Vocational Nurses	8,969	9,531	337	56	281	83%	738
Medical Assistants	6,421	7,553	185	113	72	39%	712
Dental Assistants	3,529	4,330	146	80	66	45%	
Pharmacy Technicians	3,303	3,936	146	63	83	57%	156
Dental Hygienists	2,767	3,389	118	62	56	47%	
Emergency Medical Technicians and Paramedics	3,011	3,501	110	49	61	55%	
Physical Therapists	3,727	4,377	110	65	45	41%	2,728
Radiologic Technologists Technicians	2,966	3,364	83	40	43	52%	296

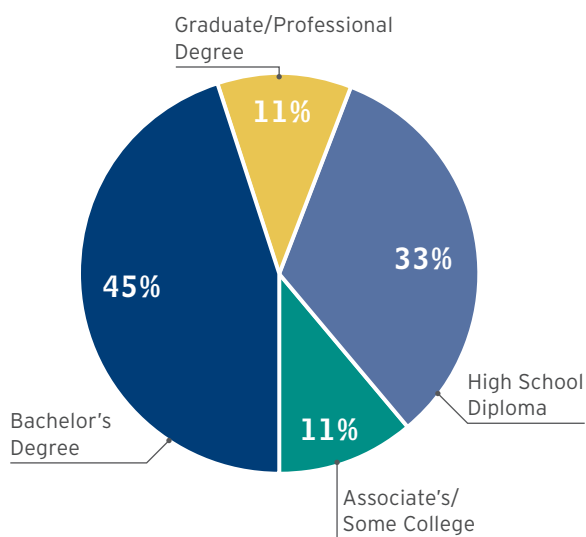
OCCUPATIONAL GROUP/ OCCUPATION TITLE	2008 EMPLOYMENT	2018	ANNUAL OPENINGS 2008-18	GROWTH	REPLACEMENT	PERCENT DUE TO REPLACEMENT	TOTAL POSTINGS 2010
Pharmacists	2,729	2,939	82	21	61	74%	596
Medical and Clinical Laboratory Technologists	2,700	2,981	79	28	51	65%	418
Physicians and Surgeons, All Other	2,793	3,042	74	25	49	66%	707
Veterinary Technologists and Technicians	1,200	1,614	71	41	30	42%	
Physician Assistants	1,592	1,961	66	37	29	44%	704
Occupational Therapists	1,734	1,985	57	25	32	56%	1,612
Massage Therapists	2,368	2,553	51	19	32	63%	199
Medical and Clinical Laboratory Technicians	1,910	2,041	49	13	36	73%	898
Medical Records and Health Information Technicians	1,603	1,741	47	14	33	70%	413
Speech-Language Pathologists	1,482	1,656	44	17	27	61%	662
Surgical Technologists	1,042	1,224	44	18	26	59%	202
Psychiatric Aides	1,675	1,935	43	26	17	40%	
Psychiatric Technicians	1,390	1,438	40	5	35	88%	231
Respiratory Therapists	1,140	1,333	40	19	21	53%	
Dentists, General	1,190	1,250	39	6	33	85%	285
Veterinarians	777	1,027	39	25	14	36%	168
Internists, General	1,238	1,359	34	12	22	65%	
Diagnostic Medical Sonographers	1,071	1,208	30	14	16	53%	180
Veterinary Assistants and Laboratory Animal Caretakers	917	1,099	28	18	10	36%	
Dietitians and Nutritionists	796	794	27	0	27	100%	219

## Education, Certification, and Experience Demand

An additional benefit of real-time labor market information generated from job-vacancy postings is the intelligence it provides about requirements in demand behind the sheer occupational numbers. Such data can signal a need for deeper inquiry with employers about hiring requirements. However, there are limitations to the reliability of information about skill requirements, just as with other elements of real-time data. Foremost among the limitations are that only a portion of analyzed vacancies indicate skill requirements at all, and among those that do, requirements are not stated in a standardized way.

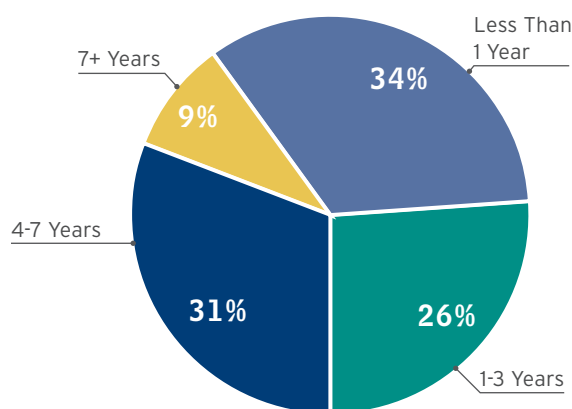
Among the 25,845 “Top 30 Health Care Job” postings reviewed, over 19,000 did not specify education requirements; 16,000 did not specify the years of experience required. Figures 2 and 3 summarize the proportion reported for the job listings that did specify years of experience and education.

**FIGURE 2.  
EDUCATION REQUIREMENTS  
FOR TOP 30 HEALTH CARE AND  
HEALTH CARE SUPPORT JOBS**



Total Postings=25,845; Unspecified Education=19,445

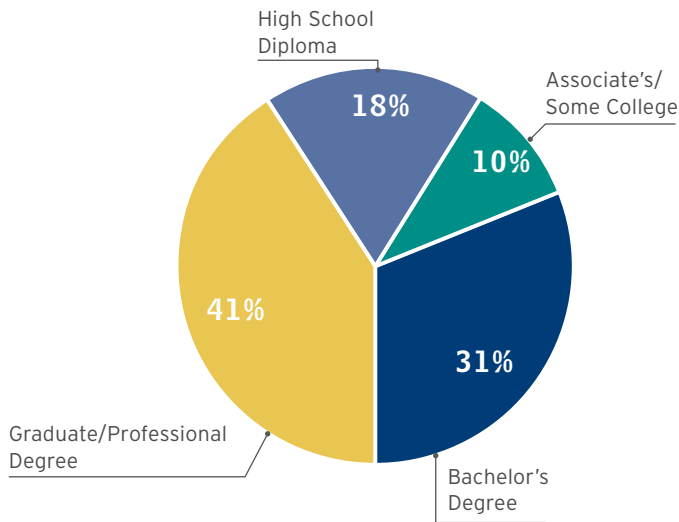
**FIGURE 3.  
EXPERIENCE REQUIREMENTS  
FOR TOP 30 HEALTH CARE AND  
HEALTH CARE SUPPORT JOBS**



Total Postings=25,845; Unspecified Education=16,359

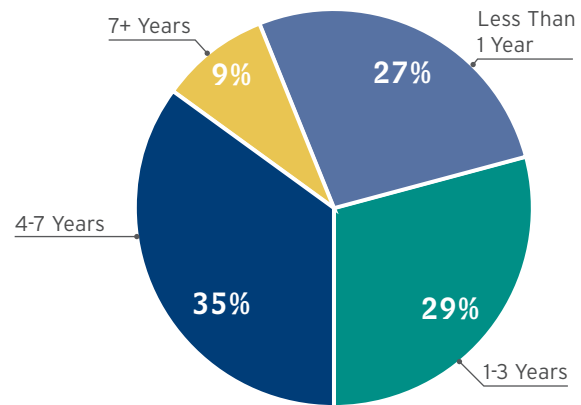
While these numbers may not present great surprises, they suggest some scale of employer expectations for various levels of education and experience. And when contrasted with those for the behavioral health subsector, telling information emerges. The demand for graduate and professional degrees was much larger in job postings for behavioral health positions than for the top health care jobs overall—41 percent versus 11 percent. And fewer of the behavioral health jobs posted were open to workers with less than one year experience than was the case for the top health jobs overall—27 percent versus 34 percent (see Figures 4 and 5 on page 20).

**FIGURE 4.  
EDUCATION REQUIREMENTS  
FOR BEHAVIORAL HEALTH JOBS**



Total Postings=2,655; Unspecified Education=1,501

**FIGURE 5.  
EXPERIENCE REQUIREMENTS  
FOR BEHAVIORAL HEALTH JOBS**



Total Postings=2,655; Unspecified Education=1,420

Another indication of educational and skills demand that can be extracted from job-vacancy postings come from the certificates and certifications requested (see Figure 6 on page 21). These requirements for the top 30 health care occupations in Connecticut reveals a disproportionately high demand for RN certification compared with all other certifications. It also suggests a strong interest in employees with management and supervisory training.

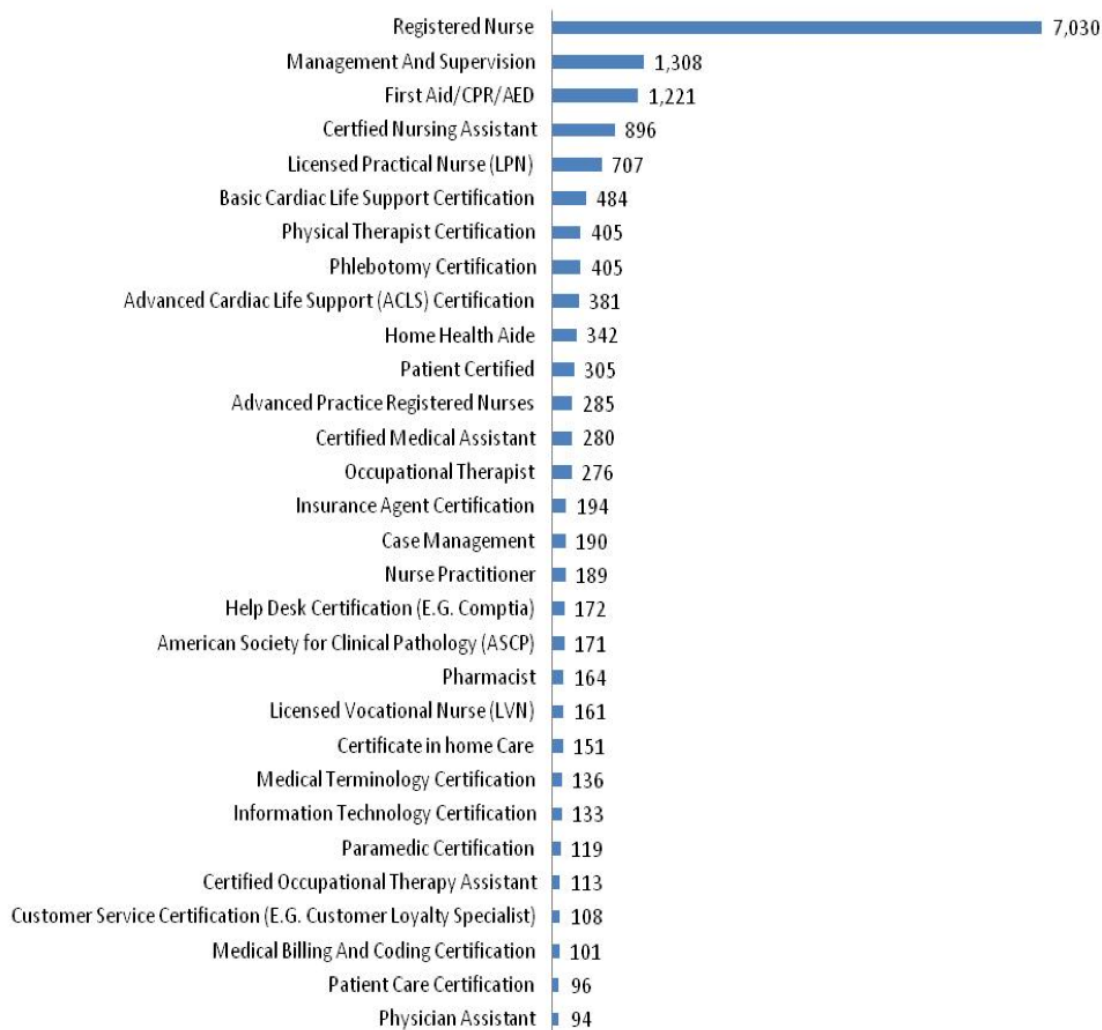
**WHAT DO EMPLOYERS TELL US ABOUT DEMAND?**

**Hospitals**

The hospital sector has little unmet demand for workers in most occupations. One of the critical exceptions is primary care physicians. The primary care physician shortage is exacerbated in Connecticut by the state's high cost of living. Some employers report that even when they can attract primary care physicians, it can be difficult to retain them due to the cost of living. Connecticut is also wedged between the Boston and New York health care markets, which are perceived to be higher status and therefore often more attractive to newly trained physicians.

A particular area of concern for many hospitals is that high school and college students are unaware of the full range of occupations in health care. The widespread perception is that health care is only about doctors and nurses, but demand will also increase for staff in allied health occupations. While the latter demand may not rise significantly, many hospitals are concerned about the future availability of

**FIGURE 6.  
CERTIFICATE/CERTIFICATIONS REQUESTED IN POSTINGS FOR TOP  
30 HEALTH CARE OCCUPATIONS**



medical technologists to replace retiring employees. Demand for skilled technicians is also anticipated to increase in the areas of sterile processing, radiology, nuclear medicine, respiratory therapy, and X-ray, mammography, and MRI.

Health information technology is an area of workforce concern that will become more important over the next three to five years. Demand will also grow for workers in medical billing and coding positions, which are increasingly integrated within hospitals' IT systems. Currently, many IT workers in health care have come from the nursing ranks. The challenge for the hospital subsector is, in the words of one respondent, "As soon as you train them, they end up working for consulting companies." Not only may a nurse be lost from the bedside, but that nurse may also be lost from the institution where she or he has worked for many years.

A broad area of new occupational demand, and one that is likely to increase significantly over the next three to five years, is that of patient navigator and case manager. As the medical and reimbursement systems become more complex, patients will need professionals who can help them get the care they need. These new positions also will be critical to the ability of hospitals to receive insurance reimbursements for the services they provide. These occupations will require people with project management skills, as well as the ability to work effectively with patients.

Currently, most hospitals train their own employees for IT-related tasks and occupations, primarily staffing them from the ranks of critical care nurses. However, it seems unlikely that enough incumbent workers will transition to new positions to meet the increased demand. Therefore, the development of new methods of training and developing these workers should be a priority going forward.

On the organizational side, many hospitals have begun hiring people with expertise in quality control and process engineering. These workers have the skills to examine how process problems can be reduced and quality increased in the complex medical environment. Demand for such occupations will increase as hospitals begin exploring and implementing new management system practices (e.g., Six Sigma, Toyota). The challenge in developing employees who can take on these jobs is to combine their quality-assurance and process-improvement capabilities with the requisite medical knowledge. This is another area that should be considered for new program development in the near future.

## Long-term Care

The workforce demands of the long-term care subsector differ significantly from those of the hospital subsector. The direct care career ladder from Certified Nursing Assistant to Licensed Practical Nurse to Registered Nurse encompasses the vast majority of direct care workers in long-term care. Of these, CNAs are by far the largest group; their recruitment and retention is one of the greatest workforce challenges in this subsector, and will likely remain so over the next three to five years. Turnover is substantial, even in the current economic climate.

Much of the long-term projected demand for CNAs is due to replacing workers who leave their jobs rather than the creation of additional CNA positions. As in every health care subsector, there is substantial economic pressure for every employee to do more with less. It is difficult to get approval for additional CNA positions without a substantial increase in either insurance reimbursement rates or the number of clients served.

The LPN has been the traditional nursing care provider in long-term care. However, this is changing. Few long-term care facilities are intentionally phasing out LPNs, but as LPNs retire or move on to new positions, employers are replacing many of them with RNs. In part, this is due to the increasing proportion of long-term care patients with chronic conditions, which require a higher level of skilled care. In addition, although the pay for LPNs is less, RNs add depth to the staff of a long-term care facility and are more flexible in terms of the services they can provide. Having additional RNs on staff also makes it easier to accommodate their personal scheduling needs and preferences, while still complying with regulatory requirements to have at least one RN on site at all times. One of the key areas of demand for education and training is for bridge programs to help incumbent LPNs become RNs.

“There are more LPNs than we need. The problem is they go from CNA to LPN, but then they get stuck. I wish there were a faster way to go to RN. And it’s too bad, because some of the LPNs are better than the RNs.”

–*Connecticut Long-Term Care Employer*

Another area of critical demand in the long-term care subsector is for therapist’s assistants, particularly physical therapy assistants and certified occupational therapy assistants. Turnover is high: these positions are well paying, but the people in them do not necessarily feel a sense of allegiance to their employers, given the wide variety of options open to them in facilities and through contract services.

## Behavioral Health

A very diverse subsector, behavioral health has significant employment opportunities in the for-profit, nonprofit, and state government sectors. Across all three of these employer types, the occupations that are most difficult to fill require Master’s degrees or above. There are many employment opportunities for psychiatrists, occupational therapists, pharmacists, social workers, and psychiatric and other advanced care nurses, and this situation is likely to continue over the next three to five years. Many employers anticipate that demand will rise across the board in behavioral health because of health care reform and the aging of the baby boomers, who tend to be more comfortable seeking out behavioral health services than were their parents.

In addition to filling direct-care positions, finding high-level managers with the requisite certifications and experience is anticipated to be a large challenge over the next three to five years. Asked about the projected demand in critical occupations, one interviewee responded by noting the need to replace “me, my COO, and my CFO. We’ll be retiring.” Initiatives to train managers and supervisors are common casualties of cost containment. Some employers are instituting mentorship programs to train the next generation of leaders internally. However, staff can be reluctant to take on additional training when it requires taking on additional hours and responsibility without commensurate pay increases.

## Ambulatory Care

Ambulatory care encompasses three distinct subsectors with dramatically different skill requirements: community health centers; doctors’ offices; and home health care. For community health centers, one of the most significant challenges over the next three to five years will be the development of leadership. Many key leaders are nearing retirement, and it is not clear where their successors will come from. Many of the same issues that community health centers face today will persist. Advanced practice RNs, physician’s assistants, nurse practitioners, and family physicians will be among the most difficult positions to fill over the next several years.<sup>17</sup>

In the doctors’ offices subsector, two occupations are likely to see significant growth over the next three to five years. The first is primary care physician. As difficult as it can be now to find a primary care physician accepting new patients, it is likely to become more so in the future. The implementation of the Affordable Care Act, with its emphasis on the medical home model, gives primary care physicians an especially central role. The second area of growth will be medical assistant. If the scope of practice for medical assistants is enhanced so they can administer medications, this occupation will see significant growth, and it will come largely at the expense of LPNs, who currently provide the medications and vaccinations

that are a staple of many office practices. This potential change was described as extremely beneficial by several employers in the physician's offices and long-term care sectors. Although no recent changes have occurred, interviewees noted current efforts in the legislature, which merit monitoring.

One of the most significant areas of hiring difficulty in office practices is mid-level management. With increased reporting requirements and issues relating to reimbursement, these responsibilities can no longer be handled by a receptionist. Increasingly, group practices have felt they must pay more attention to the business side of the work. The support occupations needed to keep up with this trend will be in significant demand in the near future.

Another support occupation likely to see significant growth is in the area of health information technology. Regulators are requiring office practices to have IT systems available, but many practices have limited financial and personnel resources to support the technology. Most practices rely on outside vendors for IT support, but this may not be a sustainable expense.

As noted, a critical emerging job is that of patient navigator. Navigators help patients and their families access the medical system and get care across multiple practices, hospitals, and other providers. There are relatively few training programs for this occupation. Most people who become patient navigators have experience in other direct-care occupations, such as nursing or medical assistant. These positions will be in great demand as the medical and reimbursement procedures driving demand for navigation assistance become more complex.

In home health, employment growth is likely to be substantial across all occupations as the subsector expands in response to new state policies. The largest occupational group in the subsector is home health aide, a job that is generally filled by a CNA trained for work in long-term care. In that subsector, CNAs have backup and support from RNs, LPNs, and others CNAs, but this is not available in home health. Therefore, another model of training for home health aides may have to be developed as this sector expands.

An emerging occupation in home health is the personal care assistant. It is challenging to classify the PCA occupation because people hire them in their homes, expecting to train them in the specific activities that need to be done. Connecticut does not have a model training program to develop or certify PCAs. As more and more people receive health care in their homes, it will become more important to develop such a program.

Finally, as noted, there may be a rise in demand for medical assistants in home health if the law changes to allow medical technicians to administer medications. Currently, only LPNs and RNs can administer medications. This is a crosscutting issue that affects all subsectors of ambulatory care.

## **SPECIAL DEMAND ISSUE: REGISTERED NURSING**

For at least two decades and across the nation, the Registered Nursing occupation has been the subject of much conjecture, analysis, and research. The U.S. Bureau of Labor Statistics has consistently projected growth in the nursing job market. Employers frequently have paid substantial bonuses to attract and retain nurses, and many employers have developed in-house training programs to advance incumbent workers from less-skilled care-giving occupations to nursing. Outside training programs have felt pressure to increase their capacity and develop flexible options.



During the current recession, much has changed (as it has periodically in the past). More incumbent nurses who might have retired in better economic times have remained employed, perhaps because of financial uncertainty or perhaps because a spouse has lost a job. Whatever the reason, demand is down for new nurses across the country.

In Connecticut, few employers currently offer signing bonuses to newly trained nurses. Further, employers report they can ask for higher levels of experience in new hires. While most education stakeholders interviewed for this study say their graduates all find jobs, most acknowledge discouraging trends: it is taking much longer than just a few years ago for graduates to find jobs; new graduates often do not immediately move into their preferred positions or into full-time work; and signing bonuses are a thing of the past.

The employment environment for Registered Nurses varies significantly by industry subsector. Hospitals, as the preferred workplace of many newly trained nurses, report they can hold out for higher levels of experience in this time of labor surplus. Hospitals typically require work experience of at least one year (usually in long-term care). Some hospitals report being willing to take on the best new graduates who had done their clinical studies at that hospital, but most require paid work experience. Long-term care facilities report hiring more RNs than they had in the past due to the increased level of care their patient populations now require. However, due to national and state economic conditions, they generally report little difficulty finding the RNs they need. Ambulatory care employers hire relatively fewer RNs than employers in other sectors and generally have had little difficulty finding RNs, most likely due to the appeal of the hours and working conditions. The behavioral health sector, in contrast, has had significant demand for RNs, primarily at the advanced practice and specialty levels. Finding and retaining these highly skilled nurses is—and will likely continue to be—a challenge, as discussed below.

In assessing the supply of RNs, a critical issue is the increasing numbers of nurses being hired in fields outside health care and in non-care-giving roles at health care employers. Insurance and biotechnology are two of the largest non-health care employers of nurses, according to qualitative information provided by key stakeholders. However, we could not confirm these findings due to the nature of the annual nurse registration information available from the Connecticut Department of Public Health. One recommendation for improving the value of labor market information collected is to require that information on industry of employment be provided with each nursing registration. This will enable stakeholders in Connecticut's health care industry to identify the proportion of nurses in non-health care industries and enable them to better predict supply-demand mismatches for this critical occupation.

The issue of nursing “drawdown” from direct care to other occupations is complex. To some extent, this situation is not new. Historically, nurses have moved from direct care to supervisory positions to management positions on a regular basis, but these moves have affected relatively few nurses, and most health care businesses have managed the changes easily. However, the number of health care occupations drawing nurses from the bedside is growing. For example, IT positions, particularly in hospitals, require a strong medical background and the capacity to interact effectively with health care providers—qualifications that experienced nurses are well positioned to meet. As the health care industry moves toward a medical home model and to comply with the requirements to become Accountable Care Organizations, the role of case manager becomes more critical; again, experienced nurses are particularly qualified to fill these jobs.

Although Connecticut's unmet demand for nurses is not "system-critical," there are important reasons to continue to focus on nursing and support the long-term growth of training:

- > Demand for nurses remains strong in the state. RNs were the largest single health care occupation advertised for in 2010, with 8,668 postings. The U.S. Bureau of Labor Statistics also projects strong employment demand in this occupation through 2018, projecting over 1,100 annual average openings.
- > Demography eventually will become destiny. Currently, the average age of an RN in Connecticut is 47.<sup>18</sup> Even if nurses postpone retirement, they will retire at some point. If the state does not increase the supply of nurses in time, the industry will face shortages.
- > Changes in health care practice are demanding both increased numbers of RNs and the training of RNs to higher levels, including advanced practice nurses, Master's degree nurses, and nurse practitioners. As experienced nurses move to these higher-level jobs, demand will increase for nurses at the entry and mid-levels.
- > As more nurses are siphoned off from direct care to other positions in health care and non-health care employers, there will be an increased demand for new nurses to fill the gap.

### What are the options for Connecticut?

- > Maintain—and expand, if at all possible—existing training programs. Because Connecticut is a high-cost-of-living state and faces significant competition from New York and Boston for newly trained nurses, "grow-your-own and retain them" strategies offer Connecticut the best opportunity to meet the projected demand for nurses.
- > Examine the possibility of increasing the number of RN training programs, especially in rural areas that have difficulty recruiting RNs, particularly in long-term care.
- > Health care employers should work closely with training programs to ensure that new nurses have the clinical and organizational skills required to perform their jobs effectively. The development of nurses from the ranks of the lower-skilled health care workforce will be critical to filling the anticipated demand for RNs.

In the past, there have been many efforts to train CNAs, patient care technicians, and other entry-level caregivers to become nurses. However, health care stakeholders in Connecticut generally have considered these ineffective. It is a long road from an entry-level position to becoming an RN.

The educational barriers to gaining entry into an RN program can be high. LPN-to-RN bridge programs are seen as better options, targeting incumbent LPNs. An LPN has demonstrated the ability to complete one challenging training program and so has a better-than-average chance to succeed in RN training. However, Connecticut stakeholders have seen bridge programs as ineffective as well due to high costs and poor clinical support. Therefore, locally based bridge programs, developed in close cooperation with critical industry stakeholders, will be critical to advancing Connecticut's LPNs to becoming RNs.

## EDUCATION LEVELS AND SKILL REQUIREMENTS

The health care industry is unique in that most of the critical occupations have well-defined education, certification, and licensure requirements. However, employers in the most critical subsectors report seeking applicants with skills beyond the minimum requirements. In today's economy, employers can be more selective than usual in hiring for most positions, so they are more able to demand preferred skills—those they report correlate highly with success on the job. Therefore, training and education providers are strongly urged to integrate the development of these skills into their training programs to offer their graduates the best possible chance of getting the job they want.

### Hospitals

While hospitals are not experiencing any shortage of applicants for CNA or Patient Care Technician positions, there is a great deal of concern about the skills of newly trained staff and their ability to handle the technical requirements and social roles of the institution. Hospitals find that CNA and PCT candidates often do not understand the reality of their roles when they enter the field and generally require 6 to 12 months experience before they are truly prepared for a hospital job. The limited clinical requirements of CNA training programs, which do not include internships, for example, are seen as insufficient to meet the needs of employers. When workers come from long-term care positions such as home care providers, prospective employers can be skeptical that they desire an acute care environment, when they might simply be interested in the stronger benefits hospitals offer. Another difficulty stakeholders cited was that CNA candidates typically come from a lower socioeconomic level than other hospital caregivers. Many face basic daily challenges, such as being single parents, accessing transportation, and getting to work on time.

A consistent challenge across the vast majority of health care positions is the growing use of information technology. "The need to be able to use technology in your job will go up 100-fold," reported one interviewee. Even for positions requiring less than a college education, the amount of information that must be processed and relayed electronically is huge. Many workers have significant technology skill gaps. Training and education programs should work with employers in all of the critical health care sectors to ensure that the latest IT systems and skill demands are incorporated into education and training at all levels.

### Long-term Care

The greatest challenge in the long-term care subsector is that certification requirements do not necessarily guarantee that an applicant has the necessary skills. CNAs face this issue more than any other occupational group in health care. There is broad agreement among long-term care focus group participants that few CNAs are adequately prepared for jobs at nursing homes. A broad spectrum of training leads to certification as a CNA, but there is state and federal standardization only for placement on the CNA registry (nurse aides who work in nursing homes). Many nursing assistants and technologists that are sometimes referred to as CNAs are not required to meet registry standards. So many "CNAs" come to the long-term care with little knowledge of what their jobs will require. They need to be better trained to understand their responsibilities as a prerequisite to receiving certification so that they can make informed decisions about what work is right for them.

Too many entry-level employees and applicants also lack a number of basic workforce and educational skills, such as how to interview for a job and how to fulfill their patient care responsibilities. CNAs and other direct caregivers now require high levels of general and computer literacy in order to complete the paperwork required for health care documentation and reimbursement. This is considered a major weakness among recent program graduates, particularly in long-term care. Skills for clinical tasks that require math, such as calculating mileage or dosages, also are generally lacking. Moreover, customer service skills are increasingly important but are often inadequate in recent graduates. Overall, the skill requirements for all levels of caregivers in the long-term care sector are increasing dramatically, and training programs are struggling to keep up.

## Behavioral Health

Many behavioral health occupations require documented levels of education and licensure. However, even with these gatekeeper requirements, employers note the lack of a number of critical skills. Across the board, the number-one weakness is in writing. Writing ability among its employees is critical to the ability of the employer to document services provided, demonstrate care to regulatory bodies, and provide the backup information necessary to obtain reimbursement.

### COMMENTS BY BEHAVIORAL HEALTH EMPLOYERS

“If you can’t document, articulate, and justify why you’re doing what you’re doing to a regulatory body or a payer, you’re going to be in trouble.”

“I would start with writing. We get people who can’t write an org [organizational] chart on clients.”

“Coming out of college, we get people without a clue about documentation. They need to know how to write a treatment plan.”

Another skill often lacking in new hires and candidates for behavioral health jobs is the ability to conduct group counseling effectively. Even at the Master’s level, employers have noticed a surprising lack of training on leading and supervising groups and understanding group dynamics. Much of the work of an entry-level clinician centers on group work, so it is essential that these skills be well-developed.

Other weaknesses among many new entrants into the field, according to employers, are the technical skills of developing treatment plans and documenting care in the specialized ways that state agencies and other reimbursement organizations require. Some new employees quickly become disillusioned by the amount of required documentation. This response can only be magnified when they are poorly trained for the task.

Many other skill gaps relate not to technical abilities but to work habits. For example, with the increasing prevalence of the fee-for-service business model, time management becomes more critical, as do productivity and efficiency. Many new entrants to the field are not prepared for a high-pressure work environment, yet employers feel they need to keep the pressure high for business reasons. The challenge of working nontraditional schedules and the demands of clients with more severe and more complex problems than ever before also present challenges to new workers. As one respondent says, “Everyone wants to be a school social worker to get the 9-to-5 [schedule], weekends off.”

## Ambulatory Care

In the ambulatory care subsector, community health centers face a unique challenge. Many clinical staff are well trained technically and have received the necessary certifications. However, many are also unfamiliar with the community health center model and find it difficult to adjust to this setting. Specific education and skill gaps arise most often among entry-level staff. Reception can be a challenge, for example: these positions require computer skills, customer service capabilities, and often the ability to speak Spanish.

## Physician Offices

In physician offices, certification and other regulatory requirements drive education levels and skill standards. A key challenge now, and likely in the future, is transitioning from the educational setting into the real world of providing care. Stakeholders report that, many students coming out of medical assisting programs are not well trained for mid-level occupations. In particular, there is concern that training programs too rarely provide practical experience and that new medical assistants require excessive orientation when they enter the workforce.

Because physician practices report that they run on thin reimbursement levels and at a hectic pace, there is little time to bring new hires up to speed. In general, respondents thought that the state technical schools do the best job of providing medical assisting training. However, some respondents report concern that if the technical schools were put under the control of local school boards, medical assisting programs might be cut to balance local budgets. This would be a significant problem for this subsector. There is also a need for more IT education below the Bachelor's or Master's degree levels.

## Home Health Care

In the home health subsector, most care-giving staff have received minimal formal education—usually earning only a high school diploma or less. However, there are substantial skills requirements for workers caring for individuals in their homes on a one-on-one basis. People need skills in both health care and personal service. There is also a need for better training in ethics and in the concepts and skills of person-centered care in general.

## TALENT DEVELOPMENT NEEDS FOR INCUMBENT WORKERS

Skill requirements for many of the critical occupations in health care have changed frequently. Recently, this phenomenon has been driven by changes in technology and, increasingly, by changes in reimbursement policies for health care services. New and emerging occupations in health care create additional talent development needs for incumbent workers.

At the entry level, there is a substantial demand for programs that increase the skills of newly trained and certified workers. Across the four health care subsectors that are the focus of this report, employers are in widespread agreement that licensing and certification requirements are no guarantee that workers are adequately prepared to enter the health care workforce. One specific need is to increase students' knowledge about the real-world jobs for which they are training. Too many employees enter health care unprepared for the demands of even entry-level positions. Among the options for programs that would

improve this are enhanced internships, longer clinical rotations, standardized curricula for training CNAs and staff for other occupations, and closer collaboration between training providers with employers.

Nor does the need for training end when newly trained students start their entry-level jobs in health care. Employers agree about the need for ongoing training for incumbent workers, both to bring them up to speed with employer needs and to meet the continuously changing demands of health care occupations. Unfortunately, the lack of funding for this lifelong learning presents a major obstacle. Another challenge is the need to provide—and pay for—substitute caregivers when workers take time off from their regular duties to participate in training.

Changes in technology also drive demand for talent development. In some cases, technology vendors provide training on their products at no cost to employers. Yet even though such arrangements offer clear advantages to employers, they do not address how businesses can afford release time for employees, nor the amount of time it takes for workers to integrate new technology into the regular operations of the facility.

As noted above, three new areas of need for talent development are widely shared across the four critical health care subsectors.

First, the increasing importance of health information technology is transforming the entire health care industry. Full adoption of IT processes includes—but requires much more than—redefining medical billing and coding jobs. It also involves systems that have the ability to share a patient's medical record among many different providers. To work in this emerging area, employees need relatively high levels of both IT and medical skills. Connecticut lacks training programs that would provide workers with both skill sets.

Second, the increasing complexity of the practice and reimbursement systems in health care is making it difficult for many patients to get the care they need. This challenge is leading to high demand for case managers and patient navigators. Currently, most workers in these positions have come from other direct-service health care positions, particularly nursing. However, as the demand for case managers and patient navigators increases, the state will need to establish training programs that develop the specific skills required to fill these occupations.

Finally, as medical systems become more complex, there is a need for process engineers who also have medical expertise to help health care businesses make their systems as efficient and fail safe as possible. Again, Connecticut has no training programs to translate specialized knowledge about process engineering and quality assurance into the health care field.

## **CAREER DEVELOPMENT AND ADVANCEMENT OPPORTUNITIES**

Within health care, the hospital subsector, employing a large workforce encompassing a wide diversity of occupations, has been considered to offer the greatest opportunities for career advancement. The classic example is the movement from CNA to LPN to RN. Many hospitals have invested in programs to help entry-level incumbent workers pursue these career opportunities. However, the economy has made it increasingly difficult to maintain these programs. Hospitals generally have retained tuition-reimbursement and flexible-transfer policies, but the task of obtaining career ladder training has fallen to the individual worker.

A critical element in the implementation of career ladders and career advancement programs is career and education counseling. One hospital reported that a full-time career counselor works with employees who want to develop and advance their careers. The counseling focuses on training workers to become RNs, but other career options are available. However, such support is far from the norm. Like the medical care and reimbursement systems, the education system has become more complex, with a widening variety of training providers offering both traditional and online options. Entry-level workers can find it challenging to navigate these choices, and the presence of career counselors would be a great asset to employees seeking to advance. Community college health career advisors do some of this work, but only a limited number serve the entire state and their funding was ending June 2011.

In long-term care, the traditional career ladder has been the same as in hospitals: from CNA to LPN to RN. But in long-term care, it often has been a greater challenge to get workers to continue to move from LPN to RN. The additional education and clinical requirements have often been daunting, and the LPN position has offered decent pay and benefits. Today, with fewer career opportunities for LPNs, it is more important for people who want to stay in a direct-care career to become an RN. In the absence of interventions, this reduction in the LPN career advancement bridge for CNAs is likely to reduce the ability of incumbent nursing workers to advance.

To advance in nursing overall, entry-level jobs could be followed by jobs requiring a Bachelor's of Science in Nursing. With a BSN, a number of rapid advancement opportunities appear. Overall, the niche that is hardest to break out of is the paraprofessional.

Nonclinical areas offer some growth opportunities. For example, dietary aides and receptionists can advance either within their occupational fields or pursue a clinical track by obtaining CNA certification. Once a person becomes an RN, they have more career options. Certified and experienced RNs can move into management, become staff developers, or pursue a variety of ancillary opportunities.

In behavioral health, career ladders are still more difficult to create for those at lower education levels, although this is not the case for behavioral health staff with professional degrees. A person can work in direct care or become a supervisor without a professional degree, but that is as far as one can go without additional education. After obtaining a Master's degree and licensure, more career opportunities open up. Those who perform well as licensed clinicians often have opportunities to create programs, for example. Many companies groom people at this level for advancement. Many of the focus group employees in behavioral health started out as clinicians and moved up the ladder to management and supervisory positions.

In behavioral health, career ladders truly begin at the Master's level. A critical step in the clinical career ladder is earning a Master's in Social Work, but this can be a long road. One way to shorten the path is to earn a Bachelor's in Social Work, after which it takes just a year to complete requirements for a Master's. The MSW is the ticket to entry-level clinical positions in both the state and private systems. Unfortunately, many incumbent workers are unaware of this potential pathway.

In the ambulatory care subsector, community health centers may offer the greatest opportunity for career development and advancement due to their size and diversity of the occupations. A key entry point into employment at a community health center is reception. Many receptionists want to become medical

assistants, although such a move is not actually advantageous for career development: it is a lateral move, with little room for career expansion. However, receptionists who gain enough skills can become office managers—an area of critical need at community health centers. Social care and case management services coordinators also are natural moves from reception, but they require employees to gain additional education.

The job of medical assistant is considered a dead end, yet many people begin it because they want to be in the medical field and believe it is the only position open in ambulatory care to those without a college degree. Community health centers generally offer tuition reimbursement and a flexible time schedule to assist people in accessing career advancement opportunities. However, the lack of formal, well-developed career ladders makes it important for the individual worker and his or her supervisor to identify career advancement options and pursue those opportunities as best they can. Further development of career ladders within the community health center and ambulatory care subsectors would assist incumbent workers significantly in accessing training and career enhancement opportunities.

Doctors' offices offer relatively few opportunities for career advancement. People who begin as CNAs or LPNs can advance to become RNs. People who enter the field as receptionists can move up to office managers.

In the home health subsector, career ladders and career advancement opportunities are extremely truncated. An entry-level employee can become a supervisor after acquiring experience and perhaps some additional training. Care-giving employees who are trained as CNAs can pursue LPN and RN degrees, but there may be limited options for advancement even with these new credentials. If the scope of practice for medical assistants in any sector were to expand to allow medication administration, that would create an additional career advancement opportunity for entry-level CNAs and home health aides.



# PART 2.

## CONNECTICUT'S HEALTH CARE WORKFORCE SUPPLY

One of the most fundamental challenges confronting policymakers and health care workforce planners is to ensure that an adequate supply of workers is available to meet demand across all occupations. This challenge is extraordinarily complex: the health care workforce is made up of a huge number of occupations requiring an extensive range of knowledge, skills, education, and training. Other factors—including scientific and technological advances, treatment innovations, public policies, and demographic changes—profoundly influence the delivery of health care services and the quantity of workers needed, as well as the specific knowledge and skills required. Monitoring developments in the supply-demand balances of the health care workforce requires a well-defined, consistent stream of reliable information.

### HEALTH CARE WORKFORCE SUPPLY IN THE CONTEXT OF DEMAND

In analyzing Connecticut's health care workforce, JFF consulted a number of sources, including the state's departments of Labor, Higher Education, Education (technical high schools) and Public Health. We also drew on a newly emerging source of data: Internet job postings. Combining these and other data sources, as in the illustrative supply-demand matrix in Table 5, can help workforce decision makers examine multiple measures of both demand and supply in one “dashboard.”

This dashboard can be constructed using any number of variables for which reliable data is collected, depending on the priorities of the stakeholders who will use it. This illustration selects a small number of key variables organized by standard occupational titles, starting with those for which we expect the largest number of annual openings. On the demand side of this dashboard, we examine employment projections, including projected annual openings and the count of Internet job postings for each occupation. The supply side includes current workers in each occupation, current license holders, and the output from related education and training programs.<sup>19</sup>

As the table shows, the data are incomplete for some occupations, a factor we discuss in our recommendations, along with the need for “cleaning up” the data that do exist. Putting the various data sources side-by-side also enables the providers of labor market information to identify areas where more data coordination is needed, as in the differences between IPEDS data collected by the Connecticut Department of Higher Education and TEPS data available on the Department of Labor website. (See *Appendix IV for an expanded supply-demand dashboard.*)

**TABLE 5.  
ILLUSTRATIVE SUPPLY-DEMAND DASHBOARD**

				<b>Real Time</b>	<b>IPEDS</b>	<b>TEPS</b>		
<b>OCCUPATIONAL GROUP / OCCUPATION TITLE</b>	<b>2008 EMPLOYMENT</b>	<b>ANNUAL OPENINGS 2008-18</b>	<b>PERCENT DUE TO REPLACEMENT</b>	<b>TOTAL POSTINGS 1/10-12/10</b>	<b>DEGREES AWARDED 2008-09</b>	<b>DEGREES AWARDED 2006-07</b>	<b>ACTIVE LICENSES</b>	<b>LICENSEE AVERAGE AGE</b>
Registered Nurses	36,715	1,174	55%	8,668	1,428	1,250	54,834	50
Home Health Aides	13,600	600	23%	383		0		
Nursing Aides, Orderlies, and Attendants	25,835	450	57%	647	422	1,975	21,335	44
Licensed Practical and Licensed Vocational Nurses	8,969	337	83%	738	513	658	12,799	49
Medical Assistants	6,421	185	39%	712	1,053	914		
Dental Assistants	3,529	146	45%		97	229		
Pharmacy Technicians	3,303	146	57%	156		0		
Dental Hygienists	2,767	118	47%		160	111	3,561	46
Emergency Medical Technicians and Paramedics	3,011	110	55%		45	252	13,420	40
Physical Therapists	3,727	110	41%	2,728	109	185	4,446	44

OCCUPATIONAL GROUP/ OCCUPATION TITLE	2008 EMPLOYMENT	ANNUAL OPENINGS 2008-18	PERCENT DUE TO REPLACEMENT	TOTAL POSTINGS 1/10-12/10	DEGREES AWARDED 2008-09	DEGREES AWARDED 2006-07	ACTIVE LICENSES	LICENSEE AVERAGE AGE
Radiologic Technologists and Technicians	2,966	83	52%	296		132	4,029	46
Pharmacists	2,729	82	74%	596	110	202		
Medical and Clinical Laboratory Technologists	2,700	79	65%	418		36		
Physicians and Surgeons, All Other	2,793	74	66%	707			16,648	52
Veterinary Technologists and Technicians	1,200	71	42%		10	17		
Physician Assistants	1,592	66	44%	704	71	77	1,693	39
Occupational Therapists	1,734	57	56%	1,612	54	29	1,966	

Such a dashboard can discourage reliance on one source of demand information, something that busy leaders of programs or institutions may be tempted to do. For instance, in this illustrative model covering a few occupations, note that over 8,000 de-duplicated job postings were identified for Registered Nurses in 2010, while traditional analyses anticipate less than 1,200 openings each year. Even starker opening-versus-posting differences emerge for physical therapists, occupational therapists, and other occupations. Though the measures are very different (future average openings versus advertisements for openings), such differences call for deeper dialogue with employers to determine if this indicates difficulty in recruiting or simply differences in hiring practices or some other factors.

The data in such a supply-demand matrix are dynamic and should be updated regularly. JFF will recommend that health care workforce planners in Connecticut maintain such a matrix in order to aggregate pertinent supply and demand data on critical occupations and to monitor how changing demographics, public policies, and labor market developments are affecting supply-demand balances.

In light of inherent analytical limitations, we offer an important qualification for examining this information: It is not a comprehensive assessment of supply and demand; rather, it is a set of reasonable approximations offered as an illustration. Many additional factors influence supply and demand in the labor market for health care workers. For example, health care practitioners and technical workers are frequently recruited from national and international pools of professionals and schools that qualify them.

Health care support occupations, particularly those at the lower end of the wage scale, tend to draw from local labor markets, which are better represented in this particular dashboard model.

With these limitations in mind, the following highlights important indicators of Connecticut's health care workforce and some of the key occupational needs that can be drawn from the matrix.

## **HEALTH CARE PRACTITIONERS AND TECHNICAL OCCUPATIONS (STANDARD OCCUPATIONAL CODE 29-0000)**

Employment for health care practitioners and technical occupations is expected to increase over 13 percent between 2008 and 2018, from 97,622 to 110,431. Registered Nurses, along with Licensed Practical Nurses and Vocational Nurses, will comprise an estimated 51,580 employees, or nearly 50 percent of the workforce included among health care practitioners and technical occupations. The data suggest strong demand for qualified nurses, with 1,174 projected annual openings for Registered Nurses. Internet job postings for 2010 showed the highest number of job postings for any professional occupation—8,668 postings for Registered Nurses—suggesting a highly active labor market. Further analysis indicates that replacements represent about 55 percent of all demand for new workers between 2008 and 2018. This is not surprising, given that the average age of Registered Nurses with active Connecticut licenses is 50 years old, according to state licensure data.

Supply data on nursing is encouraging, with over 54,000 active holders of Registered Nurse licenses reported for 2010 and 1,250 degrees issued in the 2006-07 school year. However, we expect it will become more difficult to keep up with demand as the rate of retirements rises.

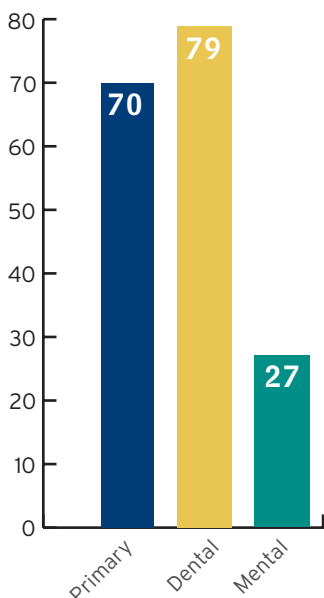
Employment for physicians, surgeons, and other physician specialties is expected to increase between 2008 and 2018, including high rates of replacement demand due to retirements. The average age was 52 for license holders in 2010. Assessing the supply and demand balance for this highly educated and skilled group of professionals is challenging in part because recruiting and training occur on a national and international scale. Internet job postings may understate demand: health care employers may use more active mechanisms to recruit these professionals. However, it is clear that this highly educated and skilled segment of the health care workforce in Connecticut, as throughout the United States, is aging and will need to be replaced in the not-too-distant future.

Given the inherent challenges of all labor market data in health care, it is important to “triangulate” various data sources and employer feedback. In the case of these high-demand occupations, the U.S. Health Resources and Services Administration offers some corroborating intelligence. HRSA data also indicate shortages of three crucial high-skilled health professionals in Connecticut: primary-care physicians; dentists; and mental health providers. While Connecticut's shortages are relatively less acute as a percentage of the population than for the nation overall, figures 7 and 8 (see page 41) indicate HRSA shortage measures.

Such indicators of national shortages are also important for Connecticut because the labor market for highly trained professions is more national than it is for lower-paid occupations, and these workers are more likely to relocate across state lines.

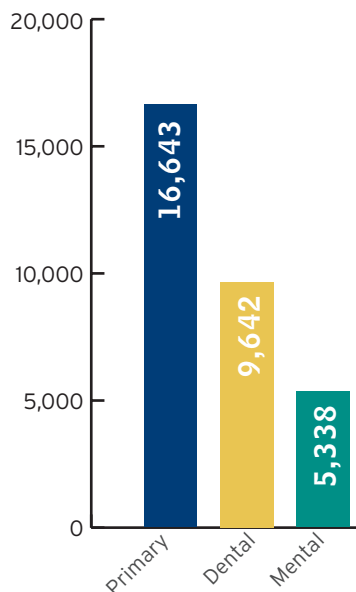
**FIGURE 7.  
HEALTH PROFESSIONAL  
SHORTAGES, CONNECTICUT,  
MAY 2010**

**PRACTITIONERS NEEDED TO MEET  
THE NEED FOR PRIMARY CARE  
PROVIDERS**



**FIGURE 8.  
HEALTH PROFESSIONAL  
SHORTAGES, UNITED STATES,  
MAY 2010**

**PRACTITIONERS NEEDED TO MEET  
THE NEED FOR PRIMARY CARE  
PROVIDERS**



**HEALTH CARE SUPPORT OCCUPATIONS  
(SOC CODE 31-0000)**

Employment in health care support occupations is expected to increase by nearly 10,000 workers between 2008 and 2018. Home health aides, nursing aides, orderlies, and attendants made up nearly two-thirds of the 60,000 workers in this occupational sector in 2008. With a growth rate of 15 percent for these occupations between 2008 and 2018, it will be challenging to ensure a trained and qualified supply of workers for Connecticut. Low pay and stressful working conditions will make it increasingly difficult to fill these jobs, especially as the economy recovers and overall employment demand picks up. There is considerable turnover and churning in this labor market, despite data showing training output equivalent to total employment numbers, along with a lower average age for license holders in these occupations. As Connecticut’s workforce ages along with the general population, it may become more problematic to keep up with constant demand for new employees to fill these occupations.

## CURRENT SUPPLY/DEMAND MISMATCHES

Currently, the worst supply/demand mismatch is for primary care physicians. Nationally and in Connecticut, the education system produces fewer primary care physicians than the health care system needs to hire. This situation is likely to worsen as health care reform, with its emphasis on primary care, is implemented. While the development of Quinnipiac University's new medical school may help address this issue to a certain extent, changes in funding and reimbursement systems will be needed to expand the primary care physician workforce. Currently, specialist services are reimbursed at much higher rates than primary care services. When doctors are in training, their mounting student loan debt often forces them to reconsider their initial decision to pursue primary care medicine in favor of more lucrative specialty practice. If reimbursement practices are changed to bring primary practice reimbursement into closer alignment with specialty practice, then more physicians may go into primary care practice. Without this change, there will likely continue to be a primary care physician shortage.

Currently, there is little supply/demand mismatch for Registered Nurses, but demand will increase as the economy recovers and the nursing workforce ages. It is not clear that the current supply system in Connecticut can meet that future demand. This situation will only be exacerbated by the increased pressure on LPNs to get their RN degrees. There is also pressure on Associate's-degree nurses to complete their BSNs. Therefore, it is important to maintain the existing nursing programs—and to augment them if at all possible, particularly at a Bachelor's-degree level.

For allied health programs, the economic climate has alleviated some supply/demand mismatches. However, as the economy recovers, employers expect to face difficulties in finding enough physical and occupational therapy assistants, radiologic technicians, and other technicians. The level of potential supply for these occupations appears barely able to meet current demand. The current supply system is likely to fall short if demographic changes and improved access to health care through health care reform increase demand for health care services.

Supply/demand mismatches also arise in newly emerging occupations. Many health care stakeholders feel that the state's education system has been slow to respond to demand in the area of health information technology. There are no formal training programs in this area. Employers are faced with training their own staff to meet these needs, which only shifts the demand. The education system should work closely with health care employers and vendors over the next year to develop training programs that meet the increasing demand for IT training.

Similarly, little training is available for the case manager/patient navigator position. Currently, the most common place where health care employers send their staff for training and certification for these occupations is the Harold P. Freeman Patient Navigation Institute in New York City. However, this represents a substantial expense. Having a local option for such training would be beneficial. The demand for case managers and patient navigators will only increase as health care reform is implemented.

## HEALTH CARE OUTPUT OF CONNECTICUT'S EDUCATION SYSTEM

Connecticut health care stakeholders cite the state's rich educational system as one of its primary strengths for preparing the sector's workforce. The university system includes many elite institutions and medical training facilities. The community colleges cover the array of traditional health care professions at the pre-baccalaureate level and have systematically developed articulation agreements in their health care training fields. Until recently, the state's K-12 education had long outpaced the nation as a whole in student testing, and it has devoted important resources to both youth and adult health career training.

### THE TECHNICAL HIGH SCHOOL SYSTEM

At the secondary level, the Connecticut Technical High School System offers a health technology career track for high school students, as well as adult health care training programs at six high schools across the state. For the 2009-10 academic year, 480 adults completed training for six occupations, with the vast majority concentrating on the state's LPN course. Over 600 students completed a concentration on medical careers as part of their high school degree education (see *Table 6*).

**TABLE 6.  
CONNECTICUT TECHNICAL HIGH SCHOOL SYSTEM HEALTH CARE TRAINING, 2009-10**

<b>ADULT PROGRAM COMPLETERS</b>	
Dental Assistant	59
Dental Laboratory Tech	10
Home Health Aide/Certified Nurse Assistant	19
Licensed Practical Nurse	326
Medical Assistant	28
Surgical Technician	38
<b>YOUTH PROGRAM COMPLETERS</b>	
High School Medical Careers Education Concentrators (Youth)	622
<b>TOTAL</b>	<b>1,102</b>

### POSTSECONDARY INSTITUTIONS

At the postsecondary level, Connecticut institutions awarded 5,090 health-related certificates in the 2009-10 school year, a figure that has increased each year since 1990-2000 (see *Table 7 on page 40*). Not only has the total number of all degrees risen over the period, but the share of degrees in health- and fitness-related majors has increased, rising from 10 percent to 13 percent of all degrees.

**TABLE 7.  
DEGREES AND CERTIFICATES COMPLETED AT CONNECTICUT  
COLLEGES AND UNIVERSITIES, BY YEAR**

YEAR	ALL DEGREES	HEALTH AND FITNESS	PERCENT OF TOTAL
1999-2000	29,757	2,979	10.0%
2000-01	29,687	3,053	10.3%
2001-02	30,498	3,150	10.3%
2002-03	32,499	3,118	9.6%
2003-04	33,659	3,411	10.1%
2004-05	34,582	3,631	10.5%
2005-06	35,694	3,928	11.0%
2006-07	36,045	4,033	11.2%
2007-08	36,634	4,301	11.7%
2008-09	38,047	4,661	12.3%
2009-10	38,912	5,090	13.1%

SOURCE: Connecticut Department of Higher Education, [www.ctdhe.org/info/pdfs/2010/2010DegreesConferredReport.pdf](http://www.ctdhe.org/info/pdfs/2010/2010DegreesConferredReport.pdf)

Strong growth in graduate output has also occurred for the critical occupational area of nursing (see Table 8). Associate's and Bachelor's degrees awarded in nursing rose from 594 in the 2000-01 academic year to 1,202 in 2009-10. The Department of Higher Education expects these completion numbers to increase even further because of added programs and increased enrollments.

**TABLE 8.  
COMPLETIONS OF NURSING DEGREES  
ASSOCIATE'S AND BACHELOR'S DEGREES AT CONNECTICUT HIGHER  
EDUCATION INSTITUTIONS, 2000-10**

CLASSIFICATION OF INSTRUCTIONAL PROGRAMS DESCRIPTION	IPEDS CLASS	2000-01	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
REGISTERED NURSING, NURSING ADMINISTRATION, NURSING RESEARCH AND CLINICAL NURSING (51.38)	Associate's degree	249	354	510	554	541	571	532
	Bachelor's degree	345	485	544	593	577	632	670
	TOTAL	594	839	1,054	1,147	1,118	1,203	1,202

SOURCE: Connecticut Department of Higher Education Completions Database  
CIP codes are all mapped to 2010 and listed at the four-digit level.



Though the growth in nursing graduate numbers look strong in relation to the annual openings forecast by the Connecticut Department of Labor for 2008-18, employers suggest, and the assessment team concurs, that careful attention should be paid to this balance. In addition to a history of swings in demand, many factors affect the transfer of training output to the supply of nurses. For example, not all program completers will work in the field for which they train or remain in state upon acquiring certification. Many find the working conditions more challenging than expected and drop out, and many employers express a preference for experienced nurses over new graduates.

## LEVELS OF HEALTH CERTIFICATES AND DEGREES

Health-related degrees and certificates awarded in Connecticut can also be broken out by the level of training required. IPEDS data indicate how many certificates were awarded at each level in the last two academic years (see *Table 9*).

**TABLE 9.**  
**CONNECTICUT HEALTH-RELATED CERTIFICATES AWARDED**

	2008-09	2009-10
Postsecondary award, certificate, or diploma of less than 1 academic year	293	459
Postsecondary award, certificate, or diploma of at least 1 but less than 2 academic years	22	55
Associate's degree	1,212	1,209
Bachelor's degree	1,471	1,541
Post-baccalaureate certificate	28	85
Master's degree	925	898
Post-Master's certificate	86	93
Doctor's degree—professional practice	422	520
Doctor's degree—research/scholarship	39	36
<b>TOTAL</b>	<b>4,498</b>	<b>4,896</b>

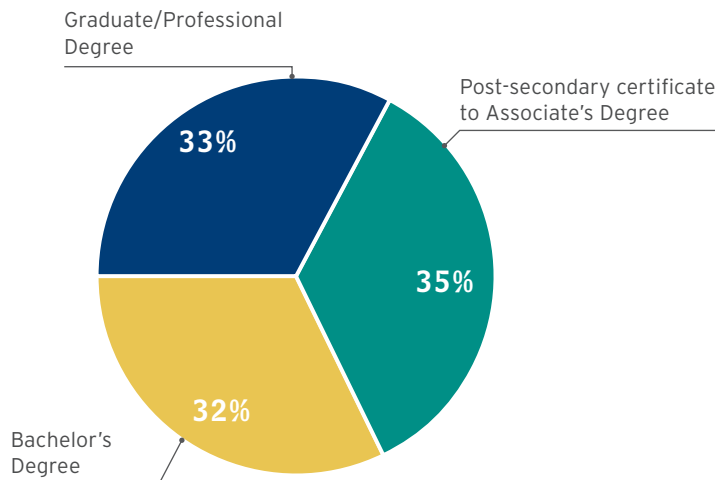
SOURCE: IPEDS data

Grouping these certificates into three primary levels—postsecondary certificate to Associate's degree; Bachelor's degree; post-baccalaureate studies—the output of the levels are almost evenly matched (see *Table 10 and Figure 9 on page 42*). While educational demand requirements as indicated in job postings is a very imperfect measure, a quick comparison suggests deeper inquiry into the appropriate balance of Associate's, Bachelor's, and graduate degrees, as well as, among other things, the bridges between Associate's and Bachelor's degrees.<sup>20</sup> For example, a far greater percentage of job postings required a Bachelor's degree (45 percent) in 2009-10 than either an Associate's/some college (11 percent) or a graduate/professional degree (11 percent).

<b>TABLE 10. CONNECTICUT POSTSECONDARY HEALTH GRADUATES</b>	
	<b>2009-10</b>
Postsecondary Certificate to Associate's Degree	1,723
Bachelor's Degree	1,541
Graduate/Professional Degree	1,632
<b>TOTAL</b>	<b>4,896</b>

SOURCE: IPEDS Data

**FIGURE 9.  
CONNECTICUT HEALTH-RELATED  
CERTIFICATES AWARDED, 2009-10**



SOURCE: IPEDS data; Table 10.

**GENDER MAKEUP OF HEALTH PROGRAM GENDER MAKEUP OF  
HEALTH PROGRAM COMPLETERS**

Over the past two academic years, about 7,000 more women than men received certificates in health-related fields, or, stated differently, women earned about 80 percent of all degrees awarded (see Table 11).

<b>TABLE 11. HEALTH CARE DEGREES AWARDED, BY GENDER</b>			
<b>2008-09</b>		<b>2009-10</b>	
<b>MEN</b>	<b>WOMEN</b>	<b>MEN</b>	<b>WOMEN</b>
885	3,613	884	4,012

SOURCE: IPEDS data

Although certificates awarded are skewed toward women, this reflects the gender balance of the workforce in each health care subsector. In Connecticut's health care and social assistance subsector, 80 percent of the workforce is female, and there is only small variation in the industry subsectors (see *Table 12*).

**TABLE 12.  
HEALTH CARE DEGREES AWARDED, BY GENDER AND  
INDUSTRY SUBSECTOR**

INDUSTRY SUBSECTOR	TOTAL	WOMEN	MEN	PERCENT WOMEN
621 Ambulatory Health Care Services	79,187	64,496	14,691	81%
623 Nursing and Residential Care Facilities	61,219	48,700	12,519	80%
622 Hospitals	56,217	43,992	12,225	78%
624 Social Assistance	43,580	35,224	8,356	81%
<b>TOTAL</b>	<b>240,203</b>	<b>192,412</b>	<b>47,791</b>	<b>80%</b>
<b>62 HEALTH CARE AND SOCIAL ASSISTANCE</b>				

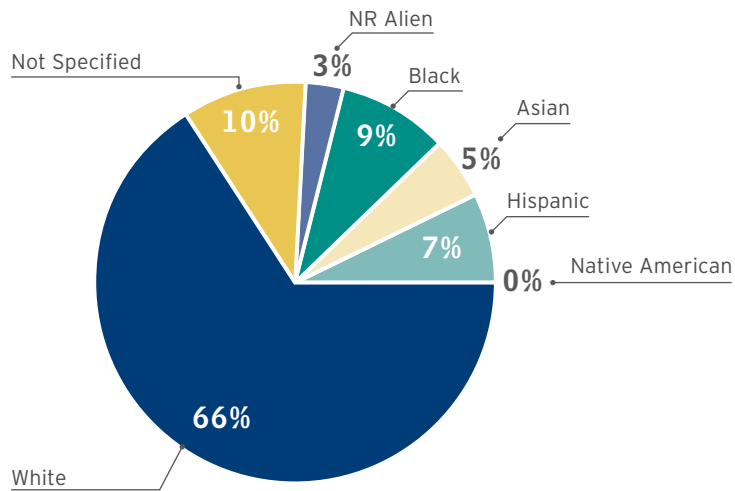
SOURCE: <http://lehd.did.census.gov/>

It should be noted that these data do not indicate that equity has been reached in health care occupations. While minority enrollment in professional programs has increased in the last 20 years, women and minority workers remain over-represented in lower-paying and lower-status occupations.<sup>21</sup> Nearly half of medical school students are women, yet most female physicians are concentrated in family specialties. And minority medical students are more likely to anticipate working in organizations and areas that provide services to underserved populations.<sup>22</sup> Working in specialties that focus on family services or underserved populations reduces income potentials compared to providing private or specialized services.<sup>23</sup>

## RACIAL MAKEUP OF CONNECTICUT HEALTH PROGRAM COMPLETERS

Among Connecticut health-related program graduates, 66 percent were white in 2009-10 (see *Figure 10 on page 44*). Black graduates were 9 percent of the total, and Asian graduates represented 5 percent, both within 1 percentage point of their representation in the state population. Non-resident, foreign-born citizens represented an additional 3 percent of completers, while Native Americans and other racial groups made up the remainder of health care graduates.

**FIGURE 10.  
HEALTH CARE DEGREES AWARDED,  
BY RACE**



The area of concern that emerges in looking at this aspect of the labor supply is that Hispanics accounted for just 7 percent of health-related graduates. This proportion is far short of the 13.4 percent they represented in Connecticut's 2010 population. Given the state's general population needs and the expected expansion of health insurance coverage, the gap in the supply of culturally competent practitioners may grow, particularly for those with Spanish language fluency.

## LEADING SUPPLIERS OF HEALTH WORKER SKILLS DEVELOPMENT

Table 13 (see page 49) lists the higher education institutions that awarded health-related certifications over the past two academic years. The University of Connecticut, Storrs is the largest provider of health degrees, although Goodwin College, Yale University, Quinnipiac University, Fairfield University, the University of Bridgeport, Gateway Community College, St. Vincent's College, and Western Connecticut State University added the largest numbers of graduates from the 2009 to the 2010 academic year.

## BARRIERS FOR ENTRY INTO EDUCATION AND TRAINING PROGRAMS

Students confront a number of barriers to entry into education and training programs for health-related occupations.

First, weak math, science, or English language communication skills delay or prevent many students from entering training programs, particularly those such as nursing that have waiting lists. Many students end up trapped in developmental education courses for semesters or years before they can get into training.

**TABLE 13.  
CONNECTICUT HEALTH DEGREES AWARDED, 2008-10,  
BY INSTITUTION**

INSTITUTION	2009-10	2008-09	PERCENT CHANGE
University of Connecticut, Storrs Campus	783*	670	17%
Quinnipiac University	568	510	11%
Yale University	509	437	16%
Goodwin College	424	280	51%
Southern Connecticut State University	264	253	4%
Gateway Community College	211	185	14%
Sacred Heart University	210	199	6%
University of Hartford	195	198	-2%
Naugatuck Valley Community College	173	162	7%
Fairfield University	162	119	36%
University of Bridgeport	158	130	22%
Capital Community College	156	156	0%
Norwalk Community College	99	120	-18%
St. Vincent's College	97	71	37%
Western Connecticut State University	97	75	29%
University of New Haven	95	109	-13%
Saint Joseph College	94	82	15%
Manchester Community College	84	95	-12%
Central Connecticut State University	75	77	-3%
Middlesex Community College	66	57	16%
Housatonic Community College	65	65	0%
Tunxis Community College	63	60	5%
Quinebaug Valley Community College	51	48	6%
Briarwood College	48	51	-6%
Three Rivers Community College	48	75	-36%
Northwestern Connecticut Community College	36	26	38%
Graduate Institute, The	27	54	-50%
Asnuntuck Community College	19	12	58%
Albertus Magnus College	12	6	100%
Charter Oak State College	7		
University of Connecticut Health Center*	*	116	-100%

\* The University of Connecticut combined reporting for all campuses including the University of Connecticut Health Center, under the Storrs campus beginning in 2009-10. The UCHC awards degrees only in dentistry (51.0401) and medicine (51.1201). In 2009-10, there were 115 completions in medicine and dentistry at the UCHC. Thus, UConn Storrs' total would reduce to 668 if separated.

\*\* Charter Oak, an online degree-aggregating college, offers over 40 concentrations inside of the liberal arts degree. However, those are not classified as majors and thus not recognized as programs.

As a result, they spend much of their financial aid and other resources simply preparing to begin the core coursework.

Second, many prospective students face challenges in finding time to pursue additional education. Workers in some positions in health care, such as CNA, often work more than one job to make enough to support their families. Yet, over the long run, people in entry-level, low-wage occupations are the ones who most need education to move ahead, and a high proportion of employees in these roles are single parents. For many people, particularly parents, balancing work-life issues can be a serious barrier to pursuing further education, even for those who earn a decent wage working one job.

Third, obtaining financial resources to enter training is a challenge. Most employers reimburse workers for job-related tuition expenses, but these programs often do not support developmental education, which is a barrier to getting into degree and certificate programs. Even people who wish to take classes that are eligible for tuition reimbursement may not be able to pay the upfront cost of tuition and books. Where feasible, tuition advancement programs would help to address this problem.

Finally, an indirect barrier can be that many people, whether currently employed in health care or not, may be unaware of the diversity of occupational opportunities in the sector. They might be under the impression that health care is mainly about doctors and nurses and overlook the sector's many other in-demand career opportunities. A good marketing program to high schools and postsecondary institutions could help to improve knowledge of the variety of opportunities.

## OTHER SUPPLY FACTORS

### THE CHALLENGE OF AN AGING WORKFORCE

Connecticut's workforce is aging, a phenomenon that is particularly challenging for the health services industry. Ambulatory health care services reported that 31 percent of the workforce in this subsector was under the age of 34 in 2000, and nearly 40 percent was over the age of 45. By 2009, workers over age 45 comprised nearly 50 percent of all workers in the subsector. For hospitals, 28 percent of workers were under the age of 34 in 2000, while 40 percent were over the age of 45, but by 2009, workers over the age of 45 again represented 50 percent of all workers. Similar trends characterize the workforce in nursing and residential care facilities and the social assistance subsector.

The health care sector is expected to continue to grow and will need more workers to provide vital health care services. Planners will also need to increasingly focus on the aging workforce issues. Aging baby boomers will retire in greater numbers with each passing year, leaving behind not only jobs that need to be filled but expertise, knowledge, and competence that need to be replaced.

### REGIONAL SUPPLY AND DEMAND DIFFERENCES

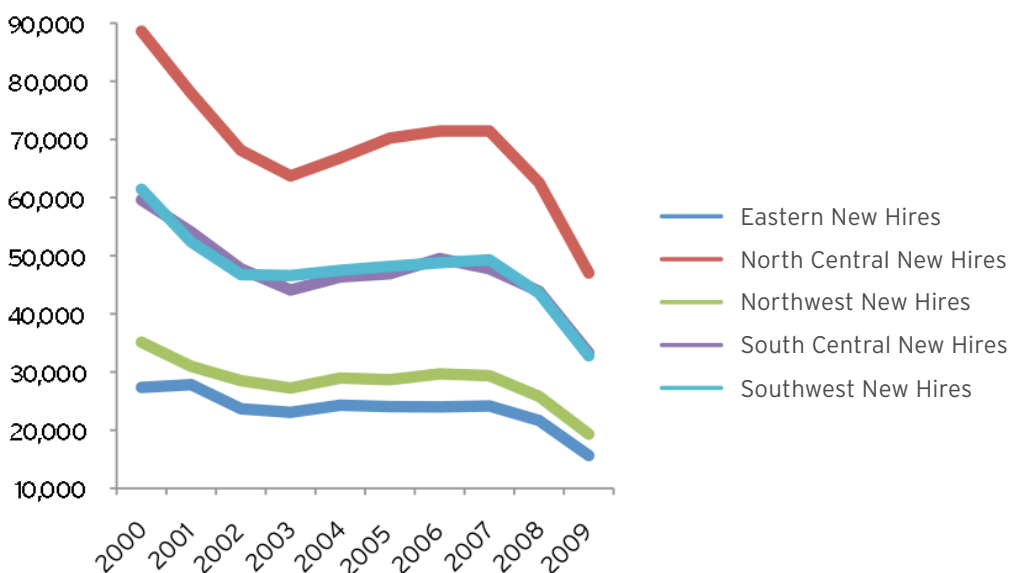
Although Connecticut is geographically small, there are differences among its major regions and among its rural, urban, and suburban areas when it comes to supply and demand in the health workforce. These differences merit further research by Connecticut workforce leaders who face regional planning needs.

Some of the necessary regional interview and focus group research with employers is underway by the Connecticut WISH team. As context, we provide initial elements of the intelligence available from JFF' employer interviews and from the data below.

Overall, total employment is significantly weighted toward the North Central workforce region of Connecticut, with a base of approximately 550,000 jobs until the recent recession. The Southwest and South Central regions are second and third, respectively, at between 325,000 and 380,000 jobs each over the past decade. The Northwest region reached just over 220,000 jobs in 2008, and the Eastern region had 180,000 just before the recession took full effect.

The regions have had fairly stable employment over the decade, but all five have faced a downward trend in annual new hires since 2000 (see *Figure 11*). And each has been especially hard hit since 2007, with over 20,000 fewer annual new hires in the North Central region in 2009 compared to 2007.

**FIGURE 11.**  
**ANNUAL REGIONAL NEW HIRES**



While total employment differs in each WIB region, so does the share of health care employment as a percent of the total (see *Table 14 on page 48*). Average employment data for 2009 suggest that while their health care jobs are absolutely fewer compared with the North Central Region, health care played a bigger role in the economy of the South Central region and slightly more yet in the Northwest region.

**TABLE 14.  
HEALTH CARE SHARE OF EMPLOYMENT, CURRENT EMPLOYMENT  
DATA, BY WIB AREA, AVERAGE Q1-Q4, 2009**

	<b>SOUTHWEST</b>	<b>NORTH CENTRAL</b>	<b>NORTHWEST</b>	<b>EASTERN</b>	<b>SOUTH CENTRAL</b>
Total Employment in WIB Area	347,711	531,963	204,466	170,264	328,313
Health Care & Social Assistance	48,926	79,632	38,152	25,162	57,294
<b>HEALTH CARE AS PERCENTAGE OF TOTAL EMPLOYMENT</b>	<b>14.1%</b>	<b>15%</b>	<b>18.7%</b>	<b>14.8%</b>	<b>17.4%</b>

The real-time data on 2010 job postings give another indication of how regional differences manifest themselves in the current economy (see *Table 15*). As might be expected by virtue of its overall employment, the North Central region had the largest absolute numbers of unduplicated health care job postings. However, as a share of total job postings, the Eastern, South Central, and Northwest areas had larger concentrations of advertisements in health care. As always, the job-postings data are not a final statement of demand, but in this case they suggest that health care may play a more important role in employment recovery in the smaller regions, even if the absolute job numbers are lower.

**TABLE 15.  
HEALTH CARE SHARE OF DEMAND: REAL-TIME JOB POSTINGS  
CURRENT EMPLOYMENT DATA, BY WIB AREA, 2010**

	<b>SOUTHWEST</b>	<b>NORTH CENTRAL</b>	<b>NORTHWEST</b>	<b>EASTERN</b>	<b>SOUTH CENTRAL</b>
Total Postings in WIB Area	71,404	86,250	22,154	12,476	30,783
Health Care & Social Assistance	6,906	11,563	3,943	3,742	6,060
<b>HEALTH CARE AS PERCENTAGE OF TOTAL POSTINGS</b>	<b>10%</b>	<b>13%</b>	<b>18%</b>	<b>30%</b>	<b>20%</b>



In addition to scale and share differences, the types of jobs in demand in each region also differ. According to the Connecticut Department of Labor's Training and Education Planning System, some health care occupations were included among the top 13 occupations projected to be "Hot Jobs" in all regions. However, there was a fair amount of variation. Note that the Hot-Jobs rankings differ from rankings based solely on the quantity of jobs: they also take into account some elements of job quality (particularly wages). These Hot Jobs were based on a combination of weighted factors, including current employment, projected employment growth rates, and wages among other criteria.

Registered Nurses were the Hot Job with the most annual projected openings in all five regions for 2006-16 (see Table 16).<sup>24</sup> The South Central and Northwest regions listed four additional health occupations in their top 13, while the Eastern region listed only Registered Nurses. The South Central region was unique in listing two behavioral health occupations among its top Hot Jobs.

**TABLE 16.**  
**"TOP JOBS" IN HEALTH CARE, 2006-16, BY WIB REGION**

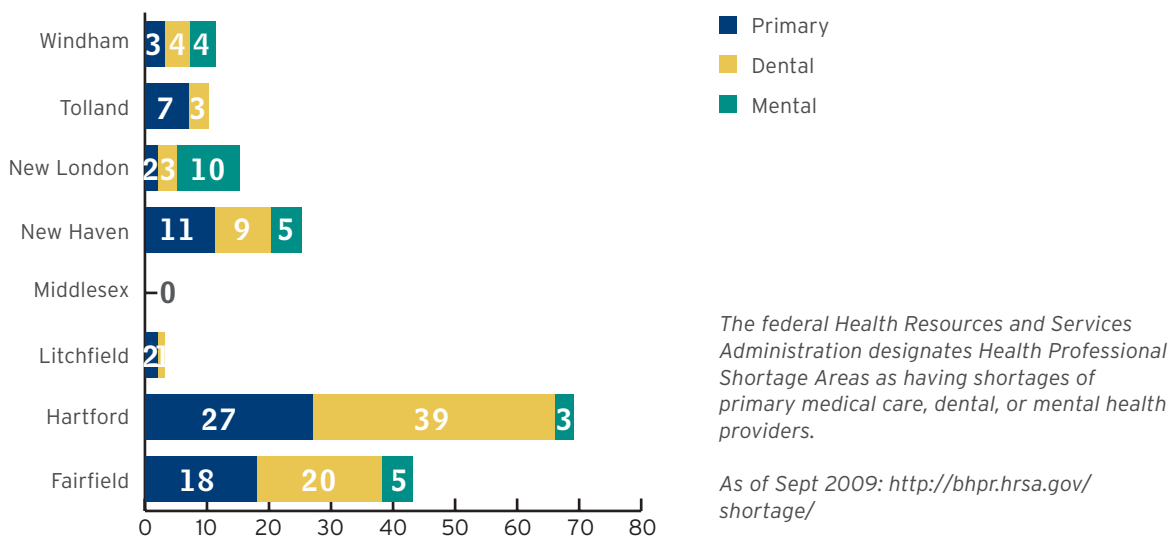
	<b>2006-16 ANNUAL PROJECTED OPENINGS</b>	<b>HOT-JOB RANKING</b>
<b>North Central</b>		
Registered Nurses	354	11
Home Health Aides	109	5
Personal & Home Care Aides	80	3
<b>Northwest</b>		
Registered Nurses	154	1
Home Health Aides	54	5
LPN & LVN	51	6
Personal & Home Care Aides	45	9
Medical Assistants	34	10
<b>Eastern</b>		
Registered Nurses	107	4
<b>South Central</b>		
Registered Nurses	279	4
Personal & Home Care Aides	66	7
Medical Assistants	47	8
Mental Health and Substance Abuse Social Workers	33	12
Mental Health Counselors	28	13
<b>Southwestern</b>		
Registered Nurse	219	13
Personal & Home Care Aides	74	4
Medical Assistant	46	7
Pharmacy technicians	35	10

SOURCE: <http://www1.ctdol.state.ct.us/lmi/forecast2006-2016/nwopen.asp>

Employers cite additional regional differences in demand and more marked differences in supply. Such regional dynamics also intersect with differences between urban and rural labor markets. Some employers in the Eastern and Northwestern regions note that their distance from popular metropolitan areas makes it more difficult to attract some workers, including entry-level workers.

The Health Resources and Services Administration provides another source to examine shortages of primary care physicians, dentists, and mental health providers by county. Figure 12 indicates HRSA estimates the gap between expected population needs for primary care physicians, dentists, and mental health doctors and the number of professionals available in each county. Based on HRSA shortage measures, only Middlesex County has an adequate supply of these professionals, and Hartford and Fairfield counties far outstrip other areas in size of the gaps, although this is in the context of relatively large populations.

**FIGURE 12.**  
**HEALTH PROFESSIONAL SHORTAGES BY COUNTY, CONNECTICUT,**  
**MAY 2010**



Beyond these professional shortages, regional differences affect hiring at lower skill levels. Some employers in long-term care and other subsectors view their competition for low-skill workers (e.g., CNAs) to be broader than the health care industry alone. This means, for example, that health care employers in the Eastern region see potential candidates and even current employees choosing to work in the growing casino sector instead, where wages are similar but shift hours are less demanding.

Employers in urban regions cite special challenges regarding the supply of entry-level workers. Large numbers of the potential urban workforce appear to live in concentrated areas of poverty and low educational attainment. This affects basic technical skills, social supports for consistent attendance, and employability skills for those with little exposure to working peers. This urban-rural-suburban dynamic should be considered in the regional research to follow this assessment.

## PART 3.

# STRENGTHS AND GAPS IN THE EXISTING SYSTEMS

Connecticut's capacity to monitor, understand, and respond to supply and demand challenges in the labor market for skilled health care workers depends upon reliable and accessible information systems. In addition, the state's ability to analyze long-term trends and the many new developments affecting demand depends upon elements of the education and delivery system that affect the pipeline, as well as partnerships between educators and health care employers and the partnerships with other important stakeholders at the state and regional level.

### CAPACITY TO PRODUCE HEALTH CARE WORKFORCE SUPPLY AND DEMAND DATA

When analyzing Connecticut's health care workforce, JFF found an extensive array of data describing supply and demand factors across the spectrum of occupations and related training programs. However, we found no single or comprehensive, ongoing measure of supply or demand for all occupations. Too many factors influence occupational supply and demand for most individual stakeholders to track on their own. And monitoring some factors requires assistance beyond state lines. Most lower-skill/lower-wage health care occupations draw workers from state and local labor markets, so incumbent workers and new entrants that come through local training programs are identified in current state data systems. However, most professional and technical occupations are recruited through regional, national, and even international recruiting strategies. Thus, occupational mobility for health care professionals makes the determination of absolute supply and demand indicators difficult to determine.

On the whole, the Connecticut Department of Labor has done impressive work in assembling the various data sets and series describing industry and occupational employment related to the health care industry and occupations. The Department of Higher Education maintains counts of enrollments and completers across the various postsecondary programs supplying the health care industry. Further, by joining these employment, education, and training supply data sets, the Department of Labor's Office of Research has

sought to calculate supply-demand indicators in order to identify where critical occupational shortages might appear. The Department of Labor's Training and Education Planning System (TEPS) is a well-organized resource for projecting demand based on a series of traditional labor market data sources. It has a robust website that makes these data accessible to users on an industry, occupational, regional, or state basis and that enables researchers to customize tables for particular needs.

JFF did find that data generated through professional licensing and certification processes were less well developed or less accessible: Connecticut relies on other states to capture important information on the supply of workers in key occupations, including vital demographic data about license holders. Nevertheless, Connecticut is well on its way to creating a practical health care workforce planning information system with the currently available data sources and analytics. We recommend that more attention be given to licensure and certification data as a critical source for workforce planning and analysis.

Connecticut also conducts specialized research on various subsectors of the health care workforce. The Connecticut Workforce Collaborative on Behavioral Health provides a strong example in its recent report, *Career Pathways in Behavioral Health*, and the Connecticut State Medical Society has commissioned detailed surveys and analyses to address challenges presented by the shortage of primary care physicians. In addition, the Connecticut Hospital Association regularly surveys its members (most of the state's hospitals) on workforce and other issues.

However, more needs to be done to assemble, integrate, and distribute data on Connecticut's health care workforce. We recommend the creation of a health care workforce portal, a place where those seeking information about this powerful sector of the economy could find data, analytical tools, and research. Such a portal should be designed with the active participation of users, including representatives from industry and professional groups, educators and training professionals, workforce experts, research analysts, and policymakers. It is discussed in more detail in the Recommendations section of this report.

## EDUCATION AND TRAINING

Connecticut health care employers, researchers, and other stakeholders cite the state's educational system as one of its primary strengths for preparing the health care workforce. In addition to the state's high-quality public and private universities, Connecticut's community college system annually trains people in nursing, numerous allied health professions, and some health care support occupations. The state's technical high school system is an important educator of LPNs and medical assistants. Generally, the quality of graduates of these systems is rated very high. Connecticut also has an extensive network of proprietary schools that provide training for LPNs, CNAs, allied health professionals, and health care support staff. The Allied Health Workforce Policy Board's annual legislative report details the array of these resources thoroughly.

At the same time, stakeholders and workforce supply data indicate that the state's talent development pipeline faces several challenges.

## THE TALENT PIPELINE

From a long-term pipeline perspective, scores on the National Assessment of Educational Progress suggest that Connecticut ranks relatively high in educational performance, but it no longer leads the country in K-12 mathematics and reading (as it had in the early 1990s). Larger percentages of Connecticut high school graduates reportedly require remedial coursework when they enter college, while many other high school students drop out and enroll in adult education programs instead of graduating with their peers. In 2010, the State Board of Education summarized student achievement as remaining flat since 2002. Moreover, literacy levels appear to be declining, and achievement gaps between whites and other racial groups have grown in recent years.<sup>25</sup>

These trends affect the health care workforce pipeline in two ways.

First, many students who struggle in school or drop out turn to health care jobs that have relatively low entry requirements (e.g., CNA), require short-term training, and appear to be in relatively abundant supply. Many of the academic problems that such school-leavers face are exacerbated by economic and social circumstances that affect their success in the workforce. With little exposure to expected work behaviors and few emotional or practical supports, they struggle to meet the demands of typical work shifts in health care. Such challenges, combined with their lower academic skills and credentials, slow their entry into further education once employed, and thus their advancement to higher-skilled health careers.

Second, many high school graduates are unprepared to meet the requirements for entering the postsecondary training that is the common path to higher skills and wages in health care. Half of Connecticut State University's first-year students and 80 percent of community colleges' first-year students test into remedial math or reading. These students are less likely to graduate college than their peers who enter with solid basic skills. The result is that only one of every four Connecticut ninth graders will earn a college degree. While this rate is better than the national average, it will need to increase significantly to help the state meet the growing employer demand for workers with postsecondary credentials.

Employers find themselves unsure of what skills a particular certified CNA can offer because of the varying level and quality of skills development among CNA training programs. Some courses last only two weeks, while others are considerably more comprehensive. Programs also offer varying levels and amounts of clinical experience and employer engagement. Employers, particularly in long-term care, cite the challenge they have in orienting new CNAs to the day-to-day demands of the workplace. Intensifying and standardizing CNA training would be helpful to both employers and program graduates who are seeking employment.

## HIGHER EDUCATION

Connecticut's institutions of higher learning are graduating growing numbers of people from their health care programs (see *Part 2*). Such growth brings challenges, and changes in demand are likely to accelerate. This makes it important to vigilantly monitor and adjust the direction of higher education's growth in health care programs. As one employer puts it, the current capacity to meet demand should not let us "fall asleep at the wheel." For example, it will be important to monitor the long-term demand for RN training, as well as the capacity of higher education to meet it.

More broadly, the state should examine the mix of levels of higher education output in relationship to demand. Connecticut's output of sub-baccalaureate, baccalaureate, and post-baccalaureate certificates and degrees are almost evenly spread, but job-posting data suggest further inquiry into whether this distribution matches demand. A far greater percent of job postings required a Bachelor's degree (45 percent) than either an Associate's degree/some college (11 percent) or a graduate/professional degree (11 percent). This could indicate a need to help more students bridge from certificates or Associate's degrees to Bachelor's degrees.<sup>26</sup>

While some employers highlight exceptional relationships with higher education institutions, insufficient employer engagement in training programs is a common problem. Most programs have employer advisory groups, but many of the employer stakeholders we interviewed and who participated in focus groups feel they could not convey all that they seek from program graduates in the time available. Several employers echo the sentiment that educators have too little time off campus to understand employer needs. As discussed further below, training and education providers should consider working with employers to develop new ways to deepen their engagement.

Finally, many training and education programs find it difficult to hire staff with sufficient practical and clinical experience. Students need real-world, internship-type experiences to help them prepare for the work in which they will engage, and faculty from industry are one important link to that. It should be noted that although the dearth of faculty is often seen as the root cause of health worker shortages, interviewees for this assessment did not express it as a strong theme.

## HOW EDUCATION AND WORKFORCE STAKEHOLDERS MONITOR DEMAND

Despite the wealth of labor market research to be found in a variety of sources and in recent health care workforce studies in Connecticut, few education providers interviewed report using such data regularly to predict demand. There are notable exceptions, particularly among large public institutions, but those institutions also most often report encountering impediments to responding quickly to the results of such research. Smaller institutions, which are seen as having more flexibility to respond, generally focus on anecdotal employer feedback and student demand for particular kinds of training in order to set program directions.

Some educators conduct research on occupational demand using data from Connecticut Department of Labor projections and from statewide industry associations, such as the Connecticut Hospital Association and the Connecticut League for Nursing. State community colleges report conducting customized feasibility studies that integrate such data with employer feedback when planning more novel program expansions, particularly those funded by the federal government and requiring demand research.

Yet many of the educators interviewed do not conduct any rigorous research on occupational demand. Instead, they rely on student registration data and informal conversations with employers to determine the need for new or continued study programs. Some solicit demand predictions from advisory boards on a quarterly basis. The smaller organizations typically do not review occupational growth data to estimate

market demand for their graduates or particular skills courses, even occasionally. While they consider such research valuable, these educators feel they have little time to conduct it and do not know which data sources would most help them reliably predict changes in market demand.

Gateway Community College and Charter Oak State College, which provides in-person and online courses from Connecticut institutions and a national network of trainers, were cited as academic institutions that are more responsive than most to employer needs. However, many employers report a perception that higher education generally is unaware of the health care sectors' special skills needs. Even when employers consider colleges to be aware, they find them slow to respond. State policies and procedures tend to corroborate this assessment. For example, the Connecticut Board of Governors' academic approval process requires at least nine months to make decisions on course proposals.<sup>27</sup> In this regard, the proprietary schools view the Affordable Care Act as providing opportunities for their growth because of their capacity to adapt quickly as the legislation drives occupational and employment changes.

Overall, the Department of Higher Education approved 17 new degree programs and 1 certificate program in the health sciences in 2009, significantly fewer than in previous years, perhaps reflecting awareness of the slowdown in worker demand. In 2008, the state approved 31 new health sciences programs.

## EMPLOYER ENGAGEMENT AND COLLABORATION

Health care employers often face challenges in recruiting and developing workforce talent. However, many such challenges have lessened in intensity during the current economic climate. Some incumbent workers who might otherwise have expected to retire have chosen to continue working. People with skills that are in demand who might otherwise have been tempted to move from company to company have been more likely to seek stability and remain with their current employers. This makes it especially challenging to determine what tactics will work best for health care employers who seek to recruit, develop, and grow their workforce talent as the economy improves. Some guidance comes from the focus groups and stakeholder interviews regarding current recruitment and talent development methods and projected opportunities going forward.

Generally, Connecticut's health care employers have invested little in workforce development during the economic downturn. In interviews, many employers in all four health care subsectors recognize that this strategy will not succeed over the long term, and they identify investments they are making or plan to make to help their workforces to remain competitive.

## HOSPITALS

For the hospital sector, a great deal of investment has continued in the recruitment and development of workforce talent in critical occupational areas. The recruitment of primary care physicians receives the largest investment in terms of dollars spent, according to hospital employers we interviewed or who participated in focus groups. There will also continue to be substantial investment in the recruitment of Registered Nurses even though the employers did not report critical shortages in those areas.

Hospitals traditionally make substantial investments in developing their workforces. While this trend appears to have receded slightly during the economic crisis, hospitals still make major investments. The training and initial orientation of physicians, nurses, and allied health professionals is a six- to eighteen-month process requiring substantial investments in both technical training and orientation to the processes and cultures of each hospital. This investment is cited as an absolute requirement. There also have been investments in training incumbent workers to take on new roles and new responsibilities in response to reimbursement and technology changes. One of the most commonly cited examples is training Registered Nurses in the use of new electronic medical records and other health information technology so they can oversee the implementation of electronic medical record systems over the next several years.

Investments in incumbent worker training designed to move people up career ladders or provide additional options along enhanced career lattices vary considerably from hospital to hospital. One traditional area of growth and advancement has been for incumbent workers at the CNA level to move through the allied health professions up to LPN or RN positions. At various times, several employers interviewed have had formal programs aimed at helping these workers advance to the much-needed RN positions. Many of these programs have been cut back, but all employers continue to offer tuition reimbursement (and in some cases tuition advancement) aimed at assisting workers at all levels to advance and potentially help hospitals meet shortages in critical occupations such as nursing.

## **NURSING AND RESIDENTIAL CARE FACILITIES**

Employers in the long-term care subsector face an ongoing challenge in recruiting frontline workers, particularly CNAs. Turnover has declined in recent years, but it is still substantial and requires significant investment in outreach and recruitment. Employer investments in this subsector generally aim at providing new CNAs with a substantial but short-term orientation to their roles and responsibilities. More than half of the employers in this subsector offer tuition reimbursement for their employees, but few offer on-site training opportunities beyond short-term workshops. These workshops primarily focus on regulatory requirements rather than providing additional skills that would enable people to advance. Employers in this subsector more than any other cite a challenging economic climate—not just in general but also in their industry due to low reimbursement rates—as a substantial barrier to investing more in developing workforce talent.

## **BEHAVIORAL HEALTH**

Recruiting is an ongoing challenge in the behavioral health subsector as well. One employer reports going “anywhere and everywhere” to search out new staff. Many behavioral health employers have affiliations with medical schools where interns and residents do rotations and get to know the employer. Some hospitals hire up to 90 percent of their needed staff through this process. Companies place ads on the major career sites, on their own websites, in major medical journals, and even on Craigslist. In some cases—for example, for recruiting Advanced Practice Registered Nurses—the situation has become desperate enough for employers to use costly recruiting firms. The most productive method for some employers has been getting current staff to return to school to develop the skills and gain the certifications and licensure required for higher-skilled jobs.



The behavioral health subsector is particularly challenged in making investments for incumbent mid-level workers, with a substantial amount of internal training required to meet licensing and reimbursement requirements. Employers acknowledge the importance of providing opportunities for incumbent workers to gain additional education. This is particularly important in a sector where a graduate degree is a requirement for advancement to positions that pay family-sustaining wages. However, most employers in this subsector operate on tight budgets. Employers report they would be eager to make investments in their workers if they had an adequate funding or reimbursement source.

## **AMBULATORY CARE**

There are substantial differences among the three major areas of the ambulatory care subsector in terms of engagement in recruiting and developing workforce talent. Community health centers offer the greatest opportunities for both the employment and the development of incumbent workers. In part, this is due to the fact that community health centers see themselves as both health care providers and also as community-based organizations dedicated to serving the communities from which most of their employees come. Community health centers face similar challenges to hospitals in the recruitment of primary care physicians, nurses, and other professionals. However, even greater than their recruiting concerns is the issue of retention for these professionals. Because they do not offer competitive wages, community health centers are disadvantaged with respect to their competition with other health care sectors for highly qualified professionals.

In doctors' offices, recruiting generally occurs through advertisements online and in local papers. Recruiting for primary care physicians is the most challenging. Some employers in this subsector offer tuition reimbursement for employees seeking education to develop their careers. Almost all employers provide workshops and other training, both in house and through vendors and other outside organizations. These workshops generally focus on regulatory requirements and changes in health insurance and Medicare and Medicaid reimbursement requirements.

Overall, it seems clear there are substantial untapped opportunities for employers in the critical health care subsectors to deepen their engagement with the education and training community and the public workforce investment system. At the community college level, most if not all programs have employer advisory boards, and many rely on health care employers to serve as clinical or internship sites. However, many employers cite a need for increased communications and engagement with community colleges to ensure that graduates are better prepared to begin work on day one of their new jobs.

For proprietary schools, most employer engagement is informal and often centers on recruiting students. Several employers specifically cite lack of engagement as a problem in hiring graduates of proprietary schools. Lack of engagement is particularly a problem for programs producing graduates in occupations that do not require state licensure. When licensure is required, the licensing process itself documents the achievement of a reasonable standard of competence on the part of graduates. When licensure is not required, it is more challenging for employers to verify that the standards that they require of new employees are being met. Increased engagement between employers and training school staff and instructors could help address this issue.

In terms of internal resources invested in training, health care employers face serious challenges. Citing changes and uncertainty in reimbursement practices, employers report having a hard time making substantial investments in training for career advancement. Yet most employers make large investments in training aimed at meeting regulatory requirements or developing the skills needed to utilize new, in-demand technologies. This is a bit of a paradox since the health care industry has a tradition of helping employees move up to better jobs that are in demand. Overall, this appears to speak to the need to increase resources devoted specifically to longer-term training for incumbent workers, given that most in-demand occupations require at least an Associate's degree.

## REGIONAL HEALTH WORKFORCE PARTNERSHIPS

The extent of regional workforce partnerships bringing together health care employers and economic development stakeholders varies across the state but appears low overall. Economic development and business associations in regions with higher-profile health care institutions generally appear more likely to recognize the importance of health care to economic growth. In the Southwest and North Central regions, larger concentrations of health employers and large, high-visibility health care employers provide a stronger environment and leadership for collaboration.

In the South Central region, the New Haven Economic Development Corporation, for instance, recognizes health care as extremely important to the economy, although it has focused on the hospital support subsector and biomedical research and development. In the past year, the EDC has established relationships with many health care (and biomedical) employers, with a focus on hospital and medical support services, such as customer service and billing services, laboratory services, and diagnostic support services. EDC also partners with New Haven's regional Workforce Investment Board, the Workforce Alliance, to develop sales and marketing training for entry and low- to intermediate-level workers. This has been mainly for biomedical companies but will be extended into health care.

The Business Council of Fairfield County has initiated numerous initiatives to support the health care industry, although mostly with a focus on issues other than workforce development. However, the "One Coast, One Future" economic integration initiative, a consortium with the Bridgeport Regional Business Council, has supported job growth in health care as well as a Health Care Workforce Initiative to develop a strategic workforce plan to strengthen the competitiveness of the region.<sup>28</sup> Both business councils are concerned about the problems of course-credit articulation between colleges (a challenge that affects career training and advancement), as well as shared scheduling systems for clinical placements to improve access to clinical experiences.

Health Care Councils have been formed by other regional business and economic development groups, but these primarily center on preparing for expected policy reforms and their potential impacts on non-health care employers. Some regional leaders report that health care typically is not high on the radar screen of economic development stakeholders as a growth industry, and it tends to be a low priority with economic developers in Connecticut in comparison with insurance and university employers. These leaders suggest that a marketing campaign to economic developers about the wide variety of jobs health care creates, and the multiplier effect of hospital and nursing home spending locally, would raise its profile as an industry and as a major employer.

A similar recommendation from a long-term care employer focus group is to support more true partnerships among workforce investors, educators, and employers. The participants in the group note that employers and even educators typically do not know what workforce system resources exist or what the system is.

## STATE PARTNERSHIPS

At the state level, the Allied Health Workforce Policy Board recently inventoried a number of current initiatives that address Connecticut's pipeline and workforce shortages.<sup>29</sup> Many of them focus on partnerships among education institutions, such as the Department of Higher Education's career pathway and transfer initiatives in health-related fields that resulted in articulation agreements among the Connecticut Community College System, the Connecticut State University System, and the University of Connecticut. Other state-level initiatives address partnerships among postsecondary and secondary institutions and workforce organizations. Such collaborations are improving career guidance, engaging high school students in STEM and health career studies, and providing young people with scholarships, retention services, and exposure to health care workplaces and mentors.

Many of the state-level initiatives engage employers as advisors, and partnerships led by Workforce Investment Boards necessarily consult employers as board members. However, most of these connections appears to occur through local or regional partnerships between colleges and health care providers. State officials recognize that partnerships are best implemented at those levels. In contrast, state-level engagement of employers is most common in strategic planning—for example, in collaboration with the Allied Health Workforce Policy Board or the Connecticut Employment and Training Commission. Some stakeholders suggest that these bodies do a good job of studying the issues, but in order to begin implementing major strategies, they must now gain more visibility for findings and engage additional partners. A number of important studies have assessed various aspects of the health care workforce and offer useful recommendations that require political will, particularly in the current financial climate.

Connecticut continues to enjoy numerous resources and initiatives to build its capacity and address some of the challenges above. Many of those are enumerated in the Connecticut Allied Health Policy Workforce Board's recent policy brief on the health care workforce and other targeted studies summarized in that report.<sup>30</sup> To build further on that work, the Recommendations section of this report highlights additional capacity building to coordinate and enhance what stakeholders currently do and to make additions that address particular gaps.

# PART 4.

## RECOMMENDATIONS

JFF's research, interviews, and focus groups yielded a number of critical findings about Connecticut's health care workforce and its challenges and opportunities, leading to a set of key recommendations emerging from the investigation.

### WORKFORCE CHALLENGES AND OPPORTUNITIES

#### **PRESSURES ON DEMAND AND SUPPLY**

While health workforce shortages have diminished, employment in the sector will continue to grow in response to several long-term drivers of labor demand, particularly Connecticut's aging patient population. At the same time, the state will be further pressed to keep the supply of health workers on pace because of the aging worker population, the outmigration of young adults, and flat or declining student achievement in the long-term pipeline. As a result, certain staple occupations (e.g., nurses, primary care physicians) will remain crucial to nurture as overall demand continues expanding.

#### **TECHNOLOGY AND BUSINESS MODEL INNOVATIONS**

Not only is the size of demand increasing, but the type of demand is shifting based on a set of recent powerful dynamics. Technology advances and health care changes are creating demand for emerging occupations in health information technology and patient navigation. The workforce will also require new skills in traditional occupations: many existing jobs will require greater skills in using technology, solving problems, and managing customers.

## **MULTIFACETED CHANGE AND THE NEED FOR INSTITUTIONAL RESPONSIVENESS**

The first two challenges will combine with significant shifts in health care legislation and intense budget pressures to both accelerate change and heighten uncertainty. Joining these pressures will be the perception among many employers that their local training and education providers are insufficiently responsive to current workforce demand or to changes in it. The level of communication between employers and education and training institutions is lower than would be desired for responsiveness, and academic institutions face barriers to acting quickly when they do encounter changing demand.

## **COORDINATION OF COMPLEX CHALLENGES AND RESOURCES**

Connecticut possesses many valuable resources and initiatives for health care education and training. The state has a large number of strong institutions, and recent efforts have laid a foundation for shared planning and action. However, these institutions have yet to adequately coordinate their workforce preparation strategies. The major sectors of the state's health care industry face some shared workforce challenges that call for collaborative action. Yet the presence of some challenges unique to each sector and regional differences also creates needs for independent action. Unique challenges may need to be addressed in sector approaches but linked in umbrella efforts that address cross-sector challenges.

## **EASE AND CONSISTENCY OF MARKET ANALYSIS**

The many sources of health workforce information are not coordinated in a way that supports complete analysis or shared understanding and strategy development. The departments of Labor, Higher Education, and Public Health, as well as other public and private institutions, maintain data systems that are integrated to some extent but not adequately. Standardization and quality control issues affect the interoperability of data systems for frequent comprehensive analyses. There is no funding for collecting or using new sources of information, like real-time labor market information, or to gain insights, “cross check” assumptions, and monitor rapid change.

## **RECOMMENDATIONS**

JFF's recommendations center on building Connecticut's capacity to continuously monitor, understand, and strategically respond to the state's growing health workforce demands, which are accelerating in their pace of change. In Appendix II, we include recommendations specific to key stakeholders in order to convey many of the valuable insights that employers and others in our focus groups and interviews shared during the course of this assessment.

## **ORGANIZE HEALTH CARE WORKFORCE DATA FOR EFFECTIVE ANALYSIS AND PLANNING.**

To ensure access to high-quality, affordable health care for Connecticut residents in the years ahead, public and private institutions providing services must be able to staff critical functions and services with well-prepared professional, technical, and support workers. An effective balance of supply and demand must be maintained for the hundreds of occupations that comprise the health care workforce. Maintaining

this complex balance will require coordination, communication, and planning among employers, professional groups, legislators, licensure bodies, and education and training providers.

As JFF analyzed Connecticut's health care industry, it became apparent that state agencies are making considerable efforts to systematically collect important information related to the supply and demand of the spectrum of occupations in this vast sector. However, our efforts to assemble this critical information in one place required intensive labor in the absence of a clear road map or central data repository to guide our search.

Furthermore, we discovered a number of excellent research efforts focused on Connecticut's health care workforce issues. Such studies should be inventoried and made readily accessible to those focused on health care workforce issues.

Fragmentation of and impediments to collecting data and research on the health care workforce constrain planning. Workforce-related investments need to be guided with sound data and research if Connecticut is to maintain the supply-demand balance essential for an effective health care delivery system.

We recommend the construction and maintenance of an Internet-based health care workforce portal to permit efficient and effective access to health care workforce information, including:

- > Employment and wage data;
- > Occupational projections;
- > Real-time job postings data;
- > Licensure and certification data;
- > Education and training supply (program of study of enrollments and completions); and
- > Compilation of health care workforce research studies.

Given the vital importance of this sector, along with the critical near-term workforce challenges confronting it in Connecticut, ongoing monitoring of workforce data developments is essential. We recommend a modest investment in—and the assignment of a lead agency to spearhead—a coordinated information strategy that would serve the needs of many public and private decision makers who need to make choices and investments related to the health care workforce. Sustainable funding to make those modest investments is also critical for improved consistency in both the data and to encourage consumer use in decision making.

## **DEEPEN EDUCATOR ENGAGEMENT WITH EMPLOYERS TO SPEED RESPONSIVENESS.**

Given the rapid change and uncertainty facing health care employers and educators alike, they must rely on each other to keep up with shifting skills needs. Employer feedback indicates that education institutions are addressing many of their traditional workforce needs yet lack resources to understand and respond quickly to specialized and evolving skills demands. Because technology and health reform will accelerate changes in demand, educator-employment engagement is a strategic capacity-building need for Connecticut.

Elements of this capacity building include:

- > Support education institutions to speed the process of approving and launching quality new programs of study to meet new demands.
- > Rapidly evaluate, based on the employment outcomes of graduates, courses that have been approved on a “research and development”-level.
- > In tandem with expanded practical experience, promote the use of online learning that accesses national resources for responding to new demand and capitalizes on technological advances.
- > Explore and identify the effectiveness and market-responsiveness of institutional governance, organizational, and staffing structures. Identify strategies that existing institutions could incorporate.
- > Design and maintain systems to regularly monitor real-time data in order to gain new insights, cross-check this assessment’s assumptions, and monitor rapid change in emerging occupations and skills in demand, as suggested in the Health Workforce Portal recommendation.
- > Build training on a Health Workforce Portal, enabling education institutions, planners, economic developers, students, workers, and career counselors to use the analysis and tools in making decisions.

## **BUILD CAPACITY FOR BROADER COLLABORATION.**

JFF’s assessment supports the Allied Health Workforce Policy Board’s recommendations to develop a health care workforce plan that identifies targets for in-demand occupations and to post a workforce scorecard on a public website. An addition suggested by some employers is to shift the focus of state collaborations toward strategy consolidation and advocacy for resources to implement such plans. This would require high-level facilitation and consensus-building support, as well as engaging additional advocates during implementation planning.

One set of advocates to include are economic and business groups with broader agendas for investment and job creation. As such, economic developers, chambers of business, and other employer associations have unique connections to employers and potential synergy with health care workforce initiatives. However, economic development stakeholders do not currently place a priority on health care jobs commensurate with its employment levels and contributions to the Gross State Product.

- > Consider an information campaign to highlight the importance of the sector to economic development stakeholders.
- > Engage with economic developers and business leaders (beyond strictly health care employers) in strategic planning for the growth of the health care sector as well as industry clusters that share related workforce needs (e.g., health information, insurance, biomedical lab and diagnostic services).
- > Involve economic growth stakeholders in developing the shared information portal for the health care workforce. The coordinated information strategy would educate stakeholders on the potential of this workforce and demonstrate potential uses in other industries.

# APPENDIX I

## RECOMMENDATIONS TAILORED TO PARTICULAR STAKEHOLDERS

### EDUCATION AND TRAINING PROVIDERS

- > Ensure that all training providers have the maximum possible flexibility to tailor training programs to the needs of working adults, including evening, part-time, and weekend options.
- > Create additional programs that train people reflecting the linguistic diversity of the communities being served, particularly as home health care accounts for an increasingly large portion of the health care landscape.
- > Continue to invest in raising student achievement in general to keep the pipeline strong, but also address literacy gaps between white and minority students.
- > Encourage education and training providers to work with public workforce stakeholders in order to ensure that students have the support services (e.g., transportation, child care) they need to complete programs and enter employment.
- > Maintain the priority on employability skills for entry-level workers, given that employers express widespread problems maintaining consistent work attendance.
- > Monitor and strengthen CNA training programs to ensure that completers meet employer standards, not just minimum requirements. A more comprehensive training program with a longer clinical component will better prepare candidates for the work that they will be expected to do on the job, particularly in long-term care.

### NURSING LABOR MARKET STAKEHOLDERS

- > Maintain nurse training programs, particularly those serving long-term care, even though there is no current shortage of nurses. It will face one when the economy improves. The state cannot afford to close programs, as happened with LPN programs.



- > Increase the emphasis on training for advanced practice nursing. This will be the focus on demand for nurses, particularly by hospitals.
- > Encourage local programs for training nurses because the Connecticut catchment area for nurses is regional.
- > Enhance the system for recruiting and retaining nurses. Because Connecticut is a high cost of living state, many nurses start out here and then leave after a few years.
- > WISH stakeholders should continue to monitor nurse education hiring requirements to ensure that nursing education in Connecticut remains responsive to employer needs. It is not clear whether or not Associate's degree nurses will continue to have strong levels of employment opportunities, as some employers indicated a strong preference for Bachelor's degree prepared nurses.

## AMBULATORY CARE SUBSECTOR

- > The workforce investment system should consider encouraging the development of specific curricula and certifications that meet the needs of home health industry. The demand for home health workers is likely to increase significantly, mostly through contract or 1099 workers.
- > Increase the scope of practice of medical assistants to administer medicine (especially vaccinations), thereby increasing their employment opportunities and the viability of some physician's practices. (However, this could also decrease the number of LPNs employed in this sector.)<sup>31</sup>

## NURSING AND RESIDENTIAL CARE SUBSECTOR

- > Maintain nurse training programs, particularly those serving long-term care, even though there is no current shortage of nurses. It will face one when the economy improves. The state cannot afford to close programs, as happened with LPN programs.
- > There will be strong demand for occupational therapy and physical therapy assistants, particularly because physical therapists must have Ph.D.s. Some of these assistants will be employed by homes directly and some by contract agencies.
- > Give special consideration to the evolving role of the LPN in long-term care.<sup>32</sup>
- > Rethink the career advancement options for entry-level staff in the subsector, which generally lacks career ladders.
- > Improve pay, preparation, and retention support (e.g., child care, transportation, life planning) of CNAs in the private sector.
- > Monitor faculty supply and demand on a data driven basis as demand for new nurses rebounds and modulates over the long term.

## HOSPITALS SUBSECTOR

- > Employers should work with community stakeholders and education and training providers to develop pipelines for bilingual health care staff. Bilingual staff, particularly bilingual nurses, will be in great demand and there is a need to increase the supply.

- > There needs to be a variety of enhanced training options for Associate's degree nurses to get their Bachelor's degree.
- > Identify a funding mechanism to support the training and retention of health information technology staff. Currently, when hospitals train them, consulting companies quickly hire them away.
- > Promote enhanced preceptorships to integrate new nurses as experienced nurses retire.

## **BEHAVIORAL HEALTH SUBSECTOR**

- > Behavioral health training programs at all levels should develop closer relations with employers to ensure that training programs address their practical needs as well as the requirements established by licensing and credentialing bodies.
- > Upgrade the state's IT capacity and create electronic medical records to lessen the administrative responsibilities of clinical behavioral health care providers.
- > Explore options to address the salary disparity between state and private providers for clinicians at all levels.
- > Explore the development of graduate school options targeted to upgrading the skills and credentials of incumbent behavioral health workers.
- > Enhance loan relief to behavioral workers serving the most disadvantaged populations.

# APPENDIX II

## ORGANIZATIONAL PARTICIPATION IN INTERVIEWS

### ASSOCIATIONS

Connecticut Association of Health Care Facilities  
Connecticut Association of Nonprofit Providers  
Connecticut Assisted Living Association  
Connecticut Commission on Aging  
Connecticut Community Providers Association  
Connecticut Community Health Center Association  
Connecticut Hospital Association  
Connecticut League for Nursing  
Connecticut Medical Society  
Connecticut Nurses Association  
Proprietary Schools Association  
Yale Medical Group

### SUPPLEMENTARY EMPLOYERS

(in addition to almost 50 focus group members)

Pediatric Healthcare Associates  
Cardiology Associates of New Haven  
St. Francis Hospital

### EDUCATION INSTITUTIONS

Charter Oak State College  
Gateway Community College  
Manchester Community College  
Quinnipiac Medical School

Educational Training of Wethersfield  
OIC of New London County  
Quinebaug Valley Community College  
Porter and Chester Institute of Branford  
American Professional Educational Services  
Connecticut Technical High School System  
University of Connecticut, Department of Pharmacy

## **ECONOMIC DEVELOPMENT AND COUNCIL OF GOVERNMENT**

New Haven Economic Development Corporation  
Capital Region Council of Governments  
Business Council of Fairfield County

## **LMI STAKEHOLDERS**

Connecticut Department of Labor  
Connecticut Department of Higher Education  
Connecticut Department of Public Health

## **LABOR ORGANIZATIONS**

1199 SEIU  
1199 SEIU Training & Upgrading Fund  
AFSCME Local 4  
American Federation of Teachers  
United Labor Agency

## **STATE HIGHER EDUCATION**

Department of Higher Education  
Connecticut Community College System  
Southern Connecticut State College

## **WORKFORCE DEVELOPMENT**

The Workplace, Southwest WIB  
South Central WIB  
Northwest Region WIB  
North Central Connecticut WIB/Capital Workforce Partners

## **OTHER**

Universal Health Care Foundation  
Connecticut Health Policy Project

# APPENDIX III

## BURNING GLASS TECHNOLOGIES

### REAL-TIME DATA ANALYSIS

CONNECTICUT'S HEALTHCARE WORKERS: UNDERSTANDING EMPLOYER EXPECTATIONS  
AN ANALYSIS BASED ON REAL-TIME JOB POSTINGS DATA BETWEEN JANUARY AND DECEMBER 2010

Submitted by Burning Glass Technologies to Jobs for the Future  
April 18, 2010

#### OVERVIEW OF METHODOLOGY

Burning Glass's system for aggregating and reporting on online job postings is designed to populate a comprehensive database of real-time job opportunity information in a manner that provides as accurate a representation as possible of the full scope of advertised labor demand.

Burning Glass's proprietary data collection program identifies jobs from over 16,000 websites, generating the largest database of current job opportunities in the industry. The two critical elements of online job aggregation are data collection (intelligent "spidering" programs that search the Internet for job listings) and deduplication (ensuring the integrity and consistency of the data set according to client-configured parameters).

#### DATA COLLECTION/SPIDERING

Burning Glass identifies viable websites with employment opportunity related content on a regular schedule utilizing spider technology to search those sites for employment opportunities. We maintain two kinds of spiders, which: 1) continually monitor or scout websites to identify those that include employment opportunities; and 2) continually spider and extract employment opportunity related information from a master list of websites.

The use of “scout” spiders is an important distinction between Burning Glass and other job data collectors. Other solutions rely on limited, manually-collected lists of job boards. As a result, they search fewer sites and they update their master list only occasionally as third-party data is released. By contrast, Burning Glass recognizes new sites almost as soon as they are launched and our master list is added to more often. We also add new spiders whenever a customer notifies us of a new website or our dedicated team of researchers finds a new site.

This sophisticated, two-step process enables Burning Glass to retrieve job listings from a much broader range of sources, including job boards, government agencies, educational institutions, and thousands of employers of all sizes, locations, and industries. It is especially significant that our spiders visit private and public employer websites directly. This enables Burning Glass to aggregate the most representative jobs database in the industry, because it includes a full span of employers, from small to large. Other solutions’ exclusive reliance on job boards means that their datasets are biased against jobs posted by small- and mid-sized businesses (the primary source of economic and job growth) because the cost of job board advertisements can prove prohibitive to many employers. This is also true of sources which aggregate jobs predominantly from large corporations. While retrieving content from a wider variety of sources does increase the burden on deduplication routines (see *below*), Burning Glass believes that the wholesale elimination of certain categories of sources (as others do—choosing to rely primarily on data from a handful of secondary sources or solely from designated large corporate sources) is not a statistically valid method for assuring data accuracy.

In order to ensure that our database represents the most up-to-date view of the labor market, Burning Glass’s spiders check each site at least once per week. Sites that add new postings most frequently are checked daily.

## DEDUPLICATION

Because Burning Glass’s database is a full reflection of job listings posted across the Internet, robust processes are required to identify and remove duplicate listings.

Rooting out duplicates is a highly sensitive task because there can be substantial ambiguity as to what constitutes a duplicate record. For example, if an employer posts a vacancy on a job board, fills it, and then advertises an identical vacancy the following week, is this a second opening or a duplicate?

Burning Glass applies a unique two-step approach to deduplication that results in more than half of all jobs we collect being deduplicated. The initial deduplication screen is undertaken on a source-level basis, with intelligence contained within the spiders themselves to identify and refrain from collecting records that have previously been aggregated. However, because duplicates can occur across sources, our next phase involves a thorough and ongoing analysis of the full database of aggregated content. This deduplication analysis is rendered possible because our advanced parsing engine extracts and normalizes an unparalleled number of data elements from each job listing, each of which can function as an individual duplicate screen or in concert with other variables, e.g. job title, job ID, source, posting date, employer name, location, job description text, etc.

As a result, the data we deliver to our clients is not only the most comprehensive representation of online hiring but also the most reliable.

## REPORT SCOPE AND DEFINITIONS

This report is based on the total number of deduplicated jobs in Connecticut between January 2010 and December 2010. In this report, healthcare and behavioral health jobs are identified and analyzed based on the following parameters:

1. Healthcare jobs: Defined as all jobs within the BLS occupational groups of Healthcare Practitioners (2 digit SOC code 29) and Healthcare Support (2 digit SOC code 31).

2. Behavioral Health jobs: Defined using a mix of occupation coding and job title search based on titles provided by JFF and the Yale Group on Workforce Development. Using the list of 100 lay titles provided by JFF, we undertook an initial search for job postings which contained those lay titles.

3. That list was then reviewed and refined by the Yale Group on Workforce Development which refined the list of job titles to those that were unambiguously behavioral health. *(See end of this appendix for a full list).*

4. Burning Glass then searched all Connecticut job postings from its database for those with job titles from the revised list of behavioral job titles, as well as the following occupation codes:

21-1021.00	Child, Family, and School Social Workers
21-1012.00	Educational, Vocational, and School Counselors
21-1013.00	Marriage and Family Therapists
21-1014.00	Mental Health Counselors
21-1023.00	Mental Health and Substance Abuse Social Workers
31-1013.00	Psychiatric Aides
29-2053.00	Psychiatric Technicians
29-1066.00	Psychiatrists
21-1011.00	Substance Abuse and Behavioral Disorder Counselors

5. Occupational codes are generated using Burning Glass's proprietary autocoder. Over 99% of the job titles have an occupation code. Approximately 85% of codings produced through our proprietary autocoder are accurate at the two-digit SOC level and between 70 and 75% are accurate at the 8-digit level.

6. Industry data are less reliable. Over 30 percent of job postings do not contain an employer name. And in a good proportion of the employers (exact statistic not available) the company name provided by the employer is not its official name available in lookup tables. To address this problem, Burning Glass uses its artificial intelligence capabilities to infer the type of industry from the company background data included within the job posting text. By combining use of company name, where available, and artificial intelligence algorithms to infer industry from company descriptions within the text of the job posting, we are able to assign an industry code for 85 percent of the job postings. These codes are 75 percent accurate at the two-digit level and 65 percent accurate at the four-digit level.

## ANALYSIS OF DEMAND FOR HEALTH OCCUPATIONS ON A STATEWIDE BASIS IN 2010

- > Total Demand for Healthcare Practitioners and Healthcare Support Jobs=28,917 openings.
- > This represents 12.3% of Connecticut's 234,201 Job Openings posted between January and December 2010.
- > Openings Broken down as follows:

**TABLE 1.  
HEALTHCARE PRACTITIONERS AND HEALTHCARE JOB OPENINGS  
IN CONNECTICUT  
JANUARY 2010 TO DECEMBER 2010**

OCCUPATION GROUP	NUMBER OF OPENINGS JAN-DEC 2010	PERCENTAGE OF TOTAL OPENINGS
Healthcare Practitioners & Technical	25,879	11%
Healthcare Support	3,038	1%
Total Number of Openings	234,201	100%

**TABLE 2.  
DEMAND FOR TOP 30 HEALTH OCCUPATIONS AND NUMBER OF  
BEHAVIORAL HEALTH JOBS IN EACH OF THE TOP 30  
JANUARY 2010 TO DECEMBER 2010**

RANK	OCCUPATION CODE	OCCUPATION TITLE	TOTAL POSTINGS	NUMBER OF BEHAVIORAL HEALTH JOBS
1	29-1111.00	Registered Nurses	8,668	278
2	29-1123.00	Physical Therapists	2,728	0
3	29-1122.00	Occupational Therapists	1,612	0
4	29-2012.00	Medical and Clinical Laboratory Technicians	898	5
5	29-2061.00	Licensed Practical and Licensed Vocational Nurses	738	7
6	31-9092.00	Medical Assistants	712	0
7	29-1069.00	Physicians and Surgeons, All Other	707	0
8	29-1071.00	Physician Assistants	704	0
9	29-1127.00	Speech-Language Pathologists	662	0
10	31-1012.00	Nursing Aides, Orderlies, and Attendants	647	2
11	29-1199.03	Nurse Practitioners	600	43
12	29-1051.00	Pharmacists	596	1
13	31-2021.00	Physical Therapist Assistants	480	0
14	29-2011.00	Medical and Clinical Laboratory Technologists	418	1



RANK	OCCUPATION CODE	OCCUPATION TITLE	TOTAL POSTINGS	NUMBER OF BEHAVIORAL HEALTH JOBS
15	29-2071.00	Medical Records and Health Information Technicians	413	0
16	31-1011.00	Home Health Aides	383	0
17	29-2034.01	Radiologic Technologists	296	0
18	29-1066.00	Psychiatrists	288	288
19	29-1021.00	Dentists, General	285	0
20	29-1069.03	Hospitalists	282	2
21	31-2011.00	Occupational Therapist Assistants	250	0
22	29-2053.00	Psychiatric Technicians	231	231
23	29-2099.00	Health Technologists and Technicians, All Other	231	0
24	29-1031.00	Dietitians and Nutritionists	219	0
25	29-2055.00	Surgical Technologists	202	0
26	31-9011.00	Massage Therapists	199	0
27	29-2081.00	Opticians, Dispensing	185	0
28	29-2032.00	Diagnostic Medical Sonographers	180	0
29	29-1131.00	Veterinarians	168	0
30	29-2052.00	Pharmacy Technicians	156	0

## ANALYSIS OF DEMAND FOR BEHAVIORAL HEALTH JOBS ON A STATEWIDE BASIS IN 2010

- > Between January and December 2010, 2,655 openings were for Behavioral Health Jobs according to the definition/methodology outlined above. This represents 1.1 percent of the total job postings.
- > About two thirds of Behavioral Health Jobs (65%) of Behavioral Health jobs were in occupations outside of the BLS healthcare occupation groups. 34% of all Behavioral Health Jobs were within the healthcare occupation, as defined by the BLS. 1% had a healthcare management occupation.
- > 3% of the 25,879 Healthcare Practitioners postings were for Behavioral Health Jobs.
- > 1.7% of the 3,038 Healthcare support jobs were for Behavioral Health Jobs

**TABLE 3.  
CROSTABULATION OF HEALTHCARE JOBS BY BEHAVIORAL HEALTH JOBS**

IS THIS A HEALTHCARE JOB? (SOC2 = 29 OR 31)?	IS THIS A BEHAVIORAL JOB?		TOTAL
	No	Yes	
No	203,537	1,747	205,284
Yes	28,009	908	28,917
TOTAL	231,546	2,655	234,201

**TABLE 4.  
BEHAVIORAL HEALTH JOBS BY OCCUPATION GROUP**

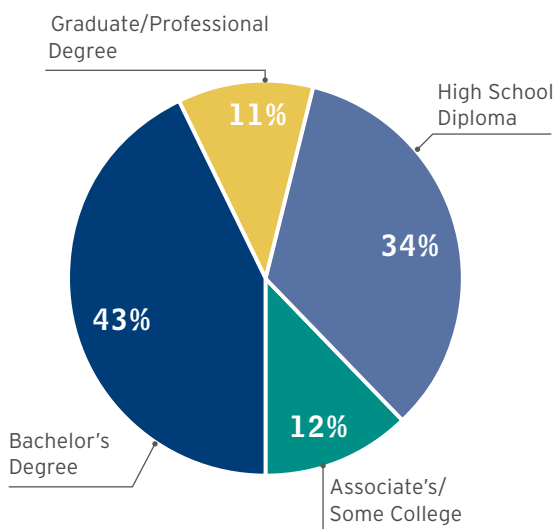
OCCUPATION GROUP	NUMBER OF POSTINGS	PERCENTAGE OF TOTAL BEHAVIORAL HEALTH JOBS
Management	32	1%
Business/Financial Operations	1	0%
Community & Social Services	1689	64%
Education, Training, & Library	11	0%
Arts, Design, Entertainment, Sports, & Media	6	0%
Healthcare Practitioners & Technical	857	32%
Healthcare Support	51	2%
Protective Service	1	0%
Personal Care & Service	1	0%
Office & Administrative Support	6	0%

**TABLE 5.  
TOP 20 BEHAVIORAL JOB POSTINGS BY OCCUPATION**

RANK	ONET	OCCUPATION TITLE	NUMBER OF POSTINGS
1	21-1023.00	Mental Health and Substance Abuse Social Workers	616
2	21-1014.00	Mental Health Counselors	504
3	29-1066.00	Psychiatrists	288
4	29-1111.00	Registered Nurses	278
5	29-2053.00	Psychiatric Technicians	231
6	21-1011.00	Substance Abuse and Behavioral Disorder Counselors	211
7	21-1013.00	Marriage and Family Therapists	172
8	21-1021.00	Child, Family, and School Social Workers	88
9	31-1013.00	Psychiatric Aides	49
10	21-1093.00	Social and Human Service Assistants	48
11	29-1199.03	Nurse Practitioners	43
12	21-1022.00	Medical and Public Health Social Workers	33
13	11-9111.00	Medical and Health Services Managers	24
14	25-1194.00	Vocational Education Teachers, Postsecondary	9
15	29-2061.00	Licensed Practical and Licensed Vocational Nurses	7
16	21-1099.00	Community and Social Service Specialists, All Other	6
17	21-1015.00	Rehabilitation Counselors	5
18	27-2012.00	Producers and Directors	5
19	29-2012.00	Medical and Clinical Laboratory Technicians	5
20	43-1011.00	First-Line Supervisors/Managers of Office and Administrative Support Workers	5

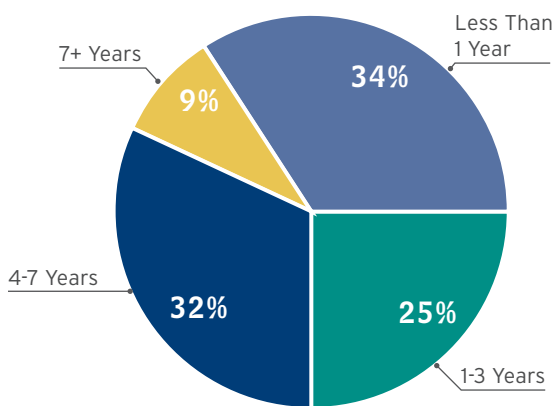
# DISTRIBUTION OF EDUCATION AND EXPERIENCE REQUIREMENTS OF HEALTHCARE OCCUPATION JOB POSTINGS AND BEHAVIORAL HEALTH JOB POSTINGS

**FIGURE 1.  
DISTRIBUTION OF EDUCATION  
IN ALL HEALTHCARE AND  
HEALTHCARE SUPPORT JOBS**



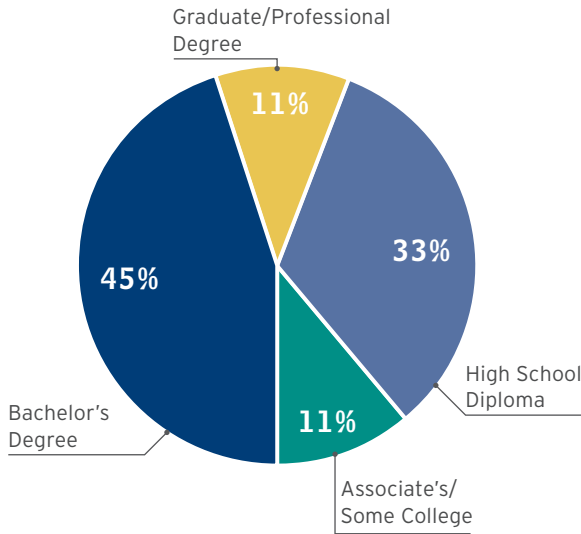
Total Postings=28,917; Unspecified Education=21,500

**FIGURE 2.  
DISTRIBUTION OF EXPERIENCE  
IN ALL HEALTHCARE AND  
HEALTHCARE SUPPORT JOBS**



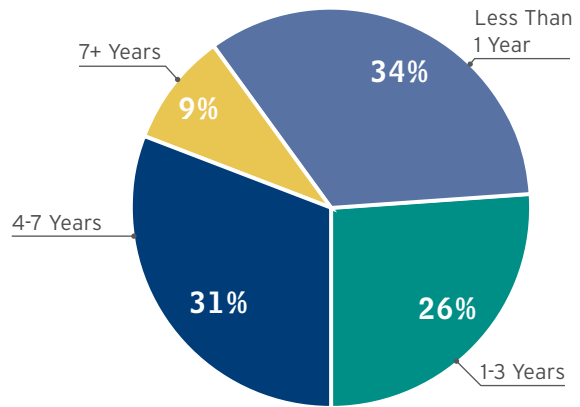
Total Postings=28,917; Unspecified Education=18,274

**FIGURE 3.  
DISTRIBUTION OF EDUCATION  
IN TOP 30 HEALTHCARE AND  
HEALTHCARE SUPPORT JOBS**



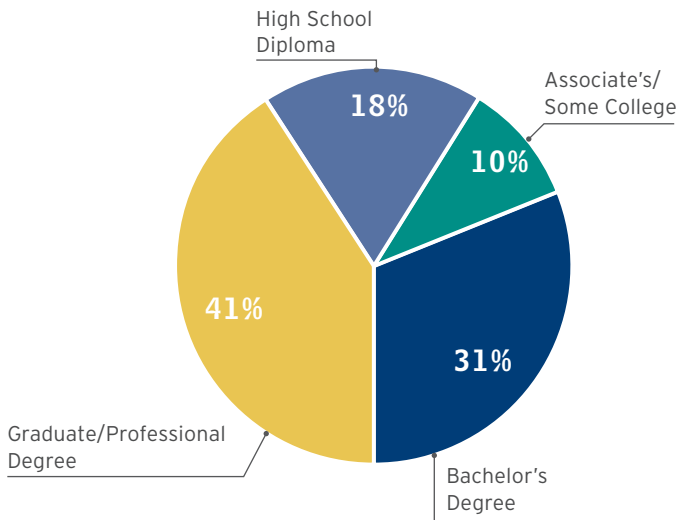
Total Postings=25,845; Unspecified Education=19,445

**FIGURE 4.  
DISTRIBUTION OF EXPERIENCE  
IN TOP 30 HEALTHCARE AND  
HEALTHCARE SUPPORT JOBS**



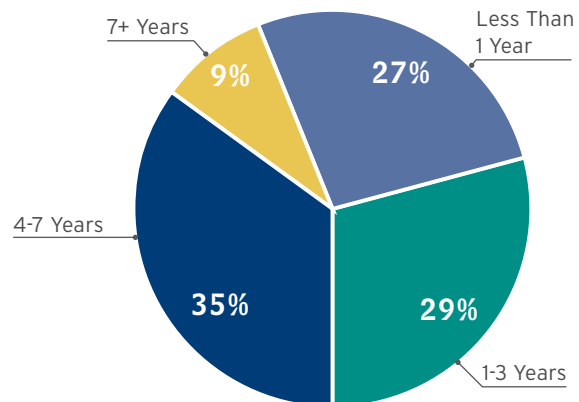
Total Postings=25,845; Unspecified Education=16,359

**FIGURE 5.  
DISTRIBUTION OF EDUCATION  
IN BEHAVIORAL HEALTH JOBS**



Total Postings=2,655; Unspecified Education=1,501

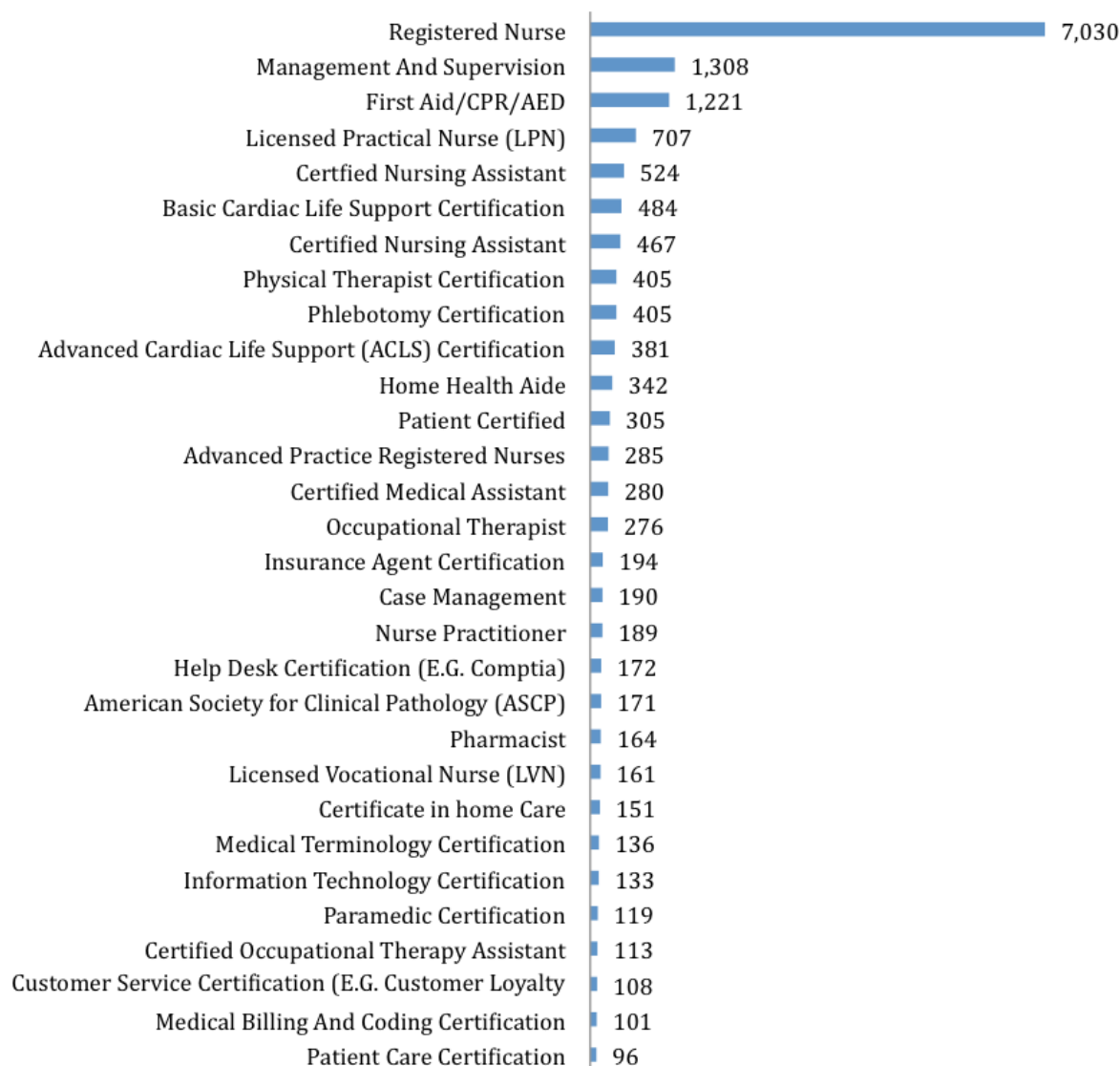
**FIGURE 6.  
DISTRIBUTION OF EXPERIENCE  
IN BEHAVIORAL HEALTH JOBS**



Total Postings=2,655; Unspecified Education=1,420

## TOP CERTIFICATIONS LISTED IN JOB POSTINGS FOR THE TOP 30 HEALTHCARE OCCUPATIONS

**FIGURE 7.**  
**TOP 30 CERTIFICATE/CERTIFICATIONS FOR TOP 30 HEALTHCARE OCCUPATIONS**



## DISTRIBUTION OF HEALTHCARE JOBS AND BEHAVIORAL HEALTH JOBS THREE 3-DIGIT INDUSTRY SUB-SECTORS AND TOP OCCUPATIONS FOR SELECTED HEALTHCARE SECTORS

**TABLE 6.  
TOP INDUSTRIES HIRING HEALTHCARE PRACTITIONERS AND HEALTHCARE SUPPORT WORKERS  
JANUARY 2010 TO DECEMBER 2010**

NAICS3	NAICS3 TITLE	NUMBER OF POSTINGS
621	Ambulatory Health Care Services	8,531
622	Hospitals	4,381
623	Nursing and Residential Care Facilities	2,538
541	Professional, Scientific, and Technical Services	1,309
611	Educational Services	876
624	Social Assistance	789
524	Insurance Carriers and Related Activities	587
446	Health and Personal Care Stores	457
561	Administrative and Support Services	313
921	Executive, Legislative, and Other General Government Support	235

**TABLE 7.  
TOP INDUSTRIES HIRING BEHAVIORAL HEALTH JOBS  
JANUARY 2010 TO DECEMBER 2010**

NAICS	NAICS TITLE	NUMBER OF POSTINGS
621	Ambulatory Health Care Services	596
622	Hospitals	471
611	Educational Services	282
541	Professional, Scientific, and Technical Services	134
624	Social Assistance	114
623	Nursing and Residential Care Facilities	84
921	Executive, Legislative, and Other General Government Support	45
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	37
561	Administrative and Support Services	22
923	Administration of Human Resource Programs	11

## STATE DEMAND AS A % OF NATIONAL DEMAND FOR TOP 30 HEALTHCARE OCCUPATIONS

**TABLE 11.  
STATEWIDE AND NATIONAL DEMAND FOR TOP 30 HEALTHCARE  
OCCUPATIONS  
JANUARY 2010 TO DECEMBER 2010**

RANK	ONET	OCCUPATION TITLE	CT POSTINGS	NATIONWIDE POSTINGS	CT OPENINGS AS PERCENTAGE OF NATIONAL JOBS
1	29-1111.00	Registered Nurses	8,668	376,296	2%
2	29-1123.00	Physical Therapists	2,728	117,850	2%
3	29-1122.00	Occupational Therapists	1,612	87,674	2%
4	29-2012.00	Medical and Clinical Laboratory Technicians	898	41,986	2%
5	29-2061.00	Licensed Practical and Licensed Vocational Nurses	738	49,211	1%
6	31-9092.00	Medical Assistants	712	35,838	2%
7	29-1069.00	Physicians and Surgeons, All Other	707	37,464	2%
8	29-1071.00	Physician Assistants	704	23,517	3%
9	29-1127.00	Speech-Language Pathologists	662	34,892	2%
10	31-1012.00	Nursing Aides, Orderlies, and Attendants	647	47,640	1%
11	29-1199.03	Nurse Practitioners	600	30,044	2%
12	29-1051.00	Pharmacists	596	43,844	1%
13	31-2021.00	Physical Therapist Assistants	480	18,172	3%
14	29-2011.00	Medical and Clinical Laboratory Technologists	418	18,844	2%
15	29-2071.00	Medical Records and Health Information Technicians	413	21,196	2%
16	31-1011.00	Home Health Aides	383	12,630	3%
17	29-2034.01	Radiologic Technologists	296	13,082	2%
18	29-1066.00	Psychiatrists	288	10,844	3%
19	29-1021.00	Dentists, General	285	12,019	2%
20	29-1069.03	Hospitalists	282	16,987	2%

RANK	ONET	OCCUPATION TITLE	CT POSTINGS	NATIONWIDE POSTINGS	CT OPENINGS AS PERCENTAGE OF NATIONAL JOBS
21	31-2011.00	Occupational Therapist Assistants	250	13,287	2%
22	29-2053.00	Psychiatric Technicians	231	15,782	1%
23	29-2099.00	Health Technologists and Technicians, All Other	231	11,783	2%
24	29-1031.00	Dietitians and Nutritionists	219	15,634	1%
25	29-2055.00	Surgical Technologists	202	11,091	2%
26	31-9011.00	Massage Therapists	199	9,231	2%
27	29-2081.00	Opticians, Dispensing	185	4,623	4%
28	29-2032.00	Diagnostic Medical Sonographers	180	6,041	3%
29	29-1131.00	Veterinarians	168	3,108	5%
30	29-2052.00	Pharmacy Technicians	156	17,627	1%

## DEMAND FOR HEALTHCARE JOBS BY COUNTY

**TABLE 12.  
JOB POSTINGS BY COUNTY  
BY HEALTHCARE OCCUPATIONS, HEALTHCARE INDUSTRY, AND BEHAVIORAL  
HEALTH JOBS  
JANUARY 2010 TO DECEMBER 2010**

COUNTY	TOTAL NUMBER OF POSTINGS	NUMBER OF POSTINGS IN HEALTHCARE OCCUPATIONS (SOC2 = 29 OR 31)	NUMBER OF POSTINGS IN HEALTHCARE INDUSTRY (NAICS2 = 62)	NUMBER OF POSTINGS IN HOSPITALS, AMBULATORY SERVICES, & NURSING/ RESIDENTIAL FACILITIES (NAICS3 = 621,622,623)	BEHAVIORAL HEALTH JOBS
Fairfield	83,985	7,992	8,656	6,504	539
Hartford	86,413	9,903	11,512	9,267	993
Litchfield	4,204	652	618	407	73
Middlesex	5,219	923	1,140	953	121
New Haven	35,108	5,463	6,738	5,631	431
New London	14,099	3,004	3,797	2,531	305
Tolland	2,320	462	530	354	55
Windham	2,721	518	707	604	138



## DEMAND FOR HEALTHCARE JOBS BY WIB AREA

**TABLE 13.  
JOB POSTINGS BY WIB AREA  
BY HEALTHCARE OCCUPATIONS, HEALTHCARE INDUSTRY, AND BEHAVIORAL  
HEALTH JOBS  
JANUARY 2010 TO DECEMBER 2010**

COUNTY	TOTAL NUMBER OF POSTINGS	NUMBER OF POSTINGS IN HEALTHCARE OCCUPATIONS (SOC2 = 29 OR 31)	NUMBER OF POSTINGS IN HEALTHCARE INDUSTRY (NAICS2 = 62)	NUMBER OF POSTINGS IN HOSPITALS, AMBULATORY SERVICES, & NURSING/ RESIDENTIAL FACILITIES (NAICS3 = 621,622,623)	BEHAVIORAL HEALTH JOBS
WIA 1: Southwest	71,661	6,246	6,906	5,113	401
WIA 2: North Central	86,431	9,955	11,563	9,289	1,009
WIA 3: Northwest	22,185	3,598	3,943	3,102	306
WIA 4: Eastern	12,483	2,842	3,742	2,585	312
WIA 5: South Central	30,832	4,925	6,060	5,120	431
<b>TOTAL</b>	<b>234,201</b>	<b>27,566</b>	<b>32,214</b>	<b>25,209</b>	<b>2,459</b>

# BEHAVIORAL HEALTH JOB TITLES

## SEARCH STRATEGIES

1. Use occupational titles from Career Pathways Report.
2. Use the Search terms: behavioral health, mental health, psychiatric, psychological, addiction, and substance abuse.
3. Below is a list of job titles that emerged from a thorough review. These may be informative regarding potential titles not captured via the above strategies. We are not suggesting that you search on all of these terms.

Addiction counselor	Consulting psychologist	Local mental health authority CEO or Director or Associate Director
Addiction nurse	Counseling psychologist	
Addiction services specialist	Crisis clinician	Marriage and family therapist
Addictions treatment specialist	Crisis intervention team member	Mental health advocate
Administrator, mental health services	Detoxification counselor	Mental health aide
Administrator, substance abuse services	Family advocate	Mental health assistant
Adolescent mental health worker	Family educator	Mental health case manager
Assertive case management (ACT) team member	Family therapist	Mental health case worker
Behavioral health services CEO, COO	Forensic case manager	Mental health clinician
Behavioral health services staff	Forensic psychiatrist	Mental health counselor
Case management aide	Forensic psychologist	Mental health nurse clinician
Child and family social worker	Forensic social worker	Mental health recovery coach
Child psychiatrist	Geriatric mental health services specialist	Mental health rehabilitation coordinator
Children and youth mental health services worker	Gerontology aide	Mental health services Chief Operating Officer
Client advocate	Geropsychiatrist	
Clinical administrator	Hispanic mental health services director	Mental health services program director
Clinical coordinator	Homeless outreach worker	Mental health team leader
Clinical psychologist	Inpatient mental health staff	Mental health worker
Clinical therapist - mental health	Latino mental health services director	Mobile crisis team member
Cognitive behavioral therapist	Lead mental health authority CEO or Director or Associate Director	Motivational therapy counselor
Community mental health center CEO	Life skills counselor	Nurse clinician
Community outreach worker	Life skills specialist	Outpatient mental health services staff
Community support worker		Outreach worker
		Parent Advocate
		Parent educator

Peer counselor	Psychiatric nurse	Substance use counselor
Peer engagement specialist	Psychiatric social worker	Substance abuse counselor
Peer support specialist	Psychiatric technician	Substance abuse treatment staff
Program coordinator - Mental health	Psychological aide	Supported education coordinator
Program coordinator - Substance abuse	Psychosocial rehabilitation counselor	Therapist
Program development coordinator	Psychosocial rehabilitation program counselor	Trauma-informed services specialist
Project coordinator, mental health	Psychotherapist	Vocational counselor
Project coordinator, substance abuse services	PTSD specialist	Vocational rehabilitation counselor
Psychiatric aide	Pupil services specialist	Volunteer coordinator, mental health
Psychiatric APRN	Recovery support specialist	Volunteer coordinator, substance abuse
Psychiatric clinician	Rehabilitation counselor	Work/life skills coach - mental health
Psychiatric hospital administrator	Residential specialist	Young adult services coordinator
Psychiatric hospital CEO	Residential staff person	Youth services professional
Psychiatric inpatient team member	Social rehabilitation counselor	Youth worker - mental health
	Social services aide	
	Social work assistant	

# APPENDIX IV

## SUPPLY-DEMAND DASHBOARD

**TABLE 5.**  
**ILLUSTRATIVE SUPPLY-DEMAND DASHBOARD**

				Real Time	IPEDS	TEPS		
OCCUPATIONAL GROUP/ OCCUPATION TITLE	2008 EMPLOYMENT	ANNUAL OPENINGS 2008-18	PERCENT DUE TO REPLACEMENT	TOTAL POSTINGS 1/10-12/10	DEGREES AWARDED 2008-09	DEGREES AWARDED 2006-07	ACTIVE LICENSES	LICENSEE AVERAGE AGE
Registered Nurses	36,715	1,174	55%	8,668	1,428	1,250	54,834	50
Home Health Aides	13,600	600	23%	383		0		
Nursing Aides, Orderlies, and Attendants	25,835	450	57%	647	422	1,975	21,335	44
Licensed Practical and Licensed Vocational Nurses	8,969	337	83%	738	513	658	12,799	49
Medical Assistants	6,421	185	39%	712	1,053	914		
Dental Assistants	3,529	146	45%		97	229		
Pharmacy Technicians	3,303	146	57%	156		0		

OCCUPATIONAL GROUP/ OCCUPATION TITLE	2008 EMPLOYMENT	ANNUAL OPENINGS 2008-18	PERCENT DUE TO REPLACEMENT	TOTAL POSTINGS 1/10-12/10	DEGREES AWARDED 2008-09	DEGREES AWARDED 2006-07	ACTIVE LICENSES	LICENSEE AVERAGE AGE
Dental Hygienists	2,767	118	47%		160	111	3,561	46
Emergency Medical Technicians and Paramedics	3,011	110	55%		45	252	13,420	40
Physical Therapists	3,727	110	41%	2,728	109	185	4,446	44
Radiologic Technologists and Technicians	2,966	83	52%	296		132	4,029	46
Pharmacists	2,729	82	74%	596	110	202		
Medical and Clinical Laboratory Technologists	2,700	79	65%	418		36		
Physicians and Surgeons, All Other	2,793	74	66%	707			16,648	52
Veterinary Technologists and Technicians	1,200	71	42%		10	17		
Physician Assistants	1,592	66	44%	704	71	77	1,693	39
Occupational Therapists	1,734	57	56%	1,612	54	29	1,966	
Massage Therapists	2,368	51	63%	199	494	573	4,327	
Medical and Clinical Laboratory Technicians	1,910	49	73%	898	53			
Medical Records and Health Information Technicians	1,603	47	70%	413	23	20		
Speech-Language Pathologists	1,482	44	61%	662	76	45	2,367	47

<b>OCCUPATIONAL GROUP/ OCCUPATION TITLE</b>	<b>2008 EMPLOYMENT</b>	<b>ANNUAL OPENINGS 2008-18</b>	<b>PERCENT DUE TO REPLACEMENT</b>	<b>TOTAL POSTINGS 1/10- 12/10</b>	<b>DEGREES AWARDED 2008-09</b>	<b>DEGREES AWARDED 2006-07</b>	<b>ACTIVE LICENSES</b>	<b>LICENSEE AVERAGE AGE</b>
Surgical Technologists	1,042	44	59%	202	31	53		
Psychiatric Aides	1,675	43	40%					
Psychiatric Technicians	1,390	40	88%	231	181	15		
Respiratory Therapists	1,140	40	53%		64	53	1,723	47
Dentists, General	1,190	39	85%	285	52	46	3,279	52
Veterinarians	777	39	36%	168		0	1,236	
Internists, General	1,238	34	65%					
Diagnostic Medical Sonographers	1,071	30	53%	180	8	9		
Veterinary Assistants and Laboratory Animal Caretakers	917	28	36%			12		
Dietitians and Nutritionists	796	27	100%	219	35	166	709	

## ENDNOTES

- <sup>1</sup> The “Health Care and Social Assistance” NAICS industry group includes 39 industries, from those providing the most intensive health care to those providing minimal health care with social assistance to those providing only social assistance.
- <sup>2</sup> Source: U.S. Health and Human Services Department, <http://www.cms.gov/nationalhealthexpenddata>
- <sup>3</sup> “National Health Expenditure Data: NHE Fact Sheet,” Centers for Medicare and Medicaid Services. [http://www.cms.gov/NationalHealthExpendData/25\\_NHE\\_Fact\\_Sheet.asp#TopOfPage](http://www.cms.gov/NationalHealthExpendData/25_NHE_Fact_Sheet.asp#TopOfPage). Accessed April 20, 2011; “OECD Health Data 2009, Frequently Requested Data.” OECD. [http://www.oecd.org/document/16/0,3343,en\\_2649\\_33929\\_2085200\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/16/0,3343,en_2649_33929_2085200_1_1_1_1,00.html). Accessed April 20, 2011.
- <sup>4</sup> “National Health Expenditure Data: NHE Fact Sheet,” Centers for Medicare and Medicaid Services. [http://www.cms.gov/NationalHealthExpendData/25\\_NHE\\_Fact\\_Sheet.asp#TopOfPage](http://www.cms.gov/NationalHealthExpendData/25_NHE_Fact_Sheet.asp#TopOfPage). Accessed March 18, 2011.
- <sup>5</sup> Truffer, Christopher J., et al. 2011. “Health Spending Projections Through 2019: The Recession’s Impact Continues.” *Health Affairs*. Vol. 30. No. 4. Abstract. <http://content.healthaffairs.org/content/early/2010/02/04/hlthaff.2009.1074.abstract>. Accessed April 20, 2011
- <sup>6</sup> See: <http://www.kaiseredu.org/Issue-Modules/US-Health-Care-Costs/Background-Brief.aspx>.
- <sup>7</sup> Truffer et al. 2011.
- <sup>8</sup> “National Health Expenditure Data: NHE Fact Sheet,” Centers for Medicare and Medicaid Services, Referenced, March 18, 2011
- <sup>9</sup> Wood, Debra. 2011. “Top Trends in Healthcare Delivery.” AMN Healthcare website, <http://www.amnhealthcare.com/News/news-details.aspx?Id=36046>, accessed April 20, 2011.
- <sup>10</sup> Wood 2011.
- <sup>11</sup> Institutes of Medicine. Digital Infrastructure for a Learning Health System: The Foundation for Continuous Improvement in Health and Health Care - Workshop Summary. Available at <http://www.iom.edu/Reports/2010/Digital-Infrastructure-for-a-Learning-Health-System.aspx>, accessed April 28, 2011.
- <sup>12</sup> The Carsey Institute, Demographic Alert Update: Mid-Decade Population Trends in New England. October 2007, [www.carseyinstitute.unh.edu](http://www.carseyinstitute.unh.edu).
- <sup>13</sup> U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis. 2003. “Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers.” Spring. <http://www.hwic.org/resources/details.php?id=1591>
- <sup>14</sup> U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis. 2003. “Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers.” Spring. <http://www.hwic.org/resources/details.php?id=1591>.
- <sup>15</sup> Gittel, Ross & Timothy Lord. 2009. “New England’s Foreign-Born Population Today.” *Communities and Banking*. Winter.
- <sup>16</sup> The NAICS defined “Social Assistance” subsector includes a wide variety of social assistance services, such as those for children, the disabled, elders, immigrants and others. They do not include residential services, except on a short stay basis. The NAICS classification is grouped with Health Care because the services are frequently intertwined.
- <sup>17</sup> Though “Nurse Practitioners” and APRNs are not distinct in State of Connecticut licensure, employers consider these to be different and hire for them differently. In particular, Nurse Practitioner is generally considered a sub-set of APRN, albeit one requiring more education than other specialties.
- <sup>18</sup> O’Leary, Sean. 2008. “State Nursing Programs Face Faculty Shortage.” *Hartford Business Journal*.

<sup>19</sup> Educational program codes were roughly cross-walked with occupational codes solely for illustrative purposes.

<sup>20</sup> See Figure 2, Educational Requirements of the Top 30 Health Care Jobs.

<sup>21</sup> Gabard, Donald L. 2007. "Increasing Minority Representation in the Health Care Professions." *Journal of Allied Health*. Vol. 36, No. 3, pp. 165-175.

<sup>22</sup> Weeks, William B. & Amy Wallace. 2006. "The Influence of Race and Gender on Family Physicians' Annual Incomes." *Journal of the American Board of Family Physicians*. Vol. 19, No. 2. pp. 548-556.

<sup>23</sup> Tiemeyer, Stacy & Hill, Twyla. 2010. 2010. "Health Care Occupations: Road to Success or Path to Dead End?" Proceedings of the 6th Annual GRASP Symposium.

<sup>24</sup> The TEPS system reports 2006-16 projections, thus differing in the primary projections we use elsewhere, from 2008-18. Thus, projected annual openings for RNs were slightly lower, at 1,113 versus 1,174 for 2008-18.

<sup>25</sup> [www.sde.ct.gov/sde/lib/sde/pdf/.../CTHighReformQandA\\_Jan10.pdf](http://www.sde.ct.gov/sde/lib/sde/pdf/.../CTHighReformQandA_Jan10.pdf)

<sup>26</sup> See Figure 2, Educational Requirements of the Top 30 Health Care Jobs.

<sup>27</sup> Connecticut Department of Higher Education. "Regulations for Licensure and Accreditation of Institutions and Programs of Higher Learning." Available at: [www.ctdhe.org/Regs/RegsAcad.htm](http://www.ctdhe.org/Regs/RegsAcad.htm), accessed April 26, 2010.

<sup>28</sup> One Coast, One Future: Southwest Economic Integration Initiative. 2007. *Health Care Industry Cluster Study*. New Haven: Holt, Wexler & Farnam, LLP.

<sup>29</sup> Allied Health Policy Workforce Board Annual Legislative Report 2010.

<sup>30</sup> Policy Brief: Connecticut's Healthcare Workforce: Under Construction, Sustinet Healthcare Workforce Taskforce. May 2010.

<sup>31</sup> This scope of practice recommendation is based on employer feedback and a workforce shortage and employment perspective. A medical safety analysis requires knowledge of the specific practices considered, and is beyond the expertise of the workforce assessment team.

<sup>32</sup> Some employers have reported needing to hire more RNs and fewer LPNs due to the increasing level of chronic conditions in their population. Others have reported that as current LPNs retire, they are being replaced with RNs.



## AUTHOR BIOS

**John Dorrer**, a program director at Jobs for the Future, leads JFF's work in labor market analysis and workforce research. He is working with a network of community colleges demonstrating the application of real-time labor market information for planning and analysis. He previously served as acting commissioner of the Maine Department of Labor and director of the Center for Workforce Research and Information.

**Robert Holm** is a program director for workforce and economic development in JFF's Building Economic Opportunity Group. Mr. Holm manages the *Regional Growth and Opportunity Initiative*, assisting regions to align economic and talent development. He also leads projects to help workforce institutions to analyze labor market needs and collaborate with economic developers and employers in the United States and abroad. Previously, with the National Center for Education and the Economy, he helped manage projects funded by the U.S. Dept. of Labor, American Association of Community Colleges, and foundations to learn and apply the lessons of regional collaboration for economic growth and talent development.

**O. Steven Quimby** is a workforce development research and planning consultant. Dr. Quimby has more than 15 years of experience in labor market research, workforce investment system implementation, and program evaluation in the public and nonprofit sectors. He has consulted with Jobs for the Future on the *Jobs to Careers* initiative as well as the *National Fund for Workforce Solutions*. As director of planning and policy research for the Merrimack Valley Workforce Investment Board, he authored several studies on local labor markets and on the impact of "grow your own" workforce development strategies.



## **JOBS FOR THE FUTURE**

TEL 617.728.4446 FAX 617.728.4857 [info@jff.org](mailto:info@jff.org)

88 Broad Street, 8th Floor, Boston, MA 02110  
2000 Pennsylvania Avenue, NW, Suite 5300, Washington, DC 20006

[WWW.JFF.ORG](http://WWW.JFF.ORG)