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# Allied Health Professions in the Health-sector Job Structure

*Françoise J. Carré, Ph.D.*

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*This article reviews the characteristics of allied health professions in the U.S., Massachusetts, and Boston health sectors. These occupations are considered in the broader context of the multitiered job structure of the health sector and their gender and ethnic composition. The discussion includes surveys of vacancy rates and wage levels for selected allied health professions in Massachusetts hospitals. The article concludes with a more detailed, albeit national, picture of these occupations in the hospital sector per se, their demographic composition, and earnings level.*

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During the late 1980s and early 1990s, hospitals in Boston and other parts of Massachusetts experienced shortages in several allied health professions. This prompted a call for expanding and making more accessible the existing allied health degree programs.<sup>1</sup> The shortages also raised hopes for the development of future career opportunities for the large number of workers currently employed in entry-level positions, many of whom belong to racial/ethnic minorities. As one local report noted, “Over 80 percent of Boston residents who are health care employees are in entry-level jobs. Only one percent of Boston public school graduates have entered health professions since 1978, due to numerous gaps in the public education-through-four-year-college-degree programs.”<sup>2</sup>

Allied health professions are hierarchically above but proximate to the numerous entry-level positions held by minorities. As such, they seem to be ideal occupations for professional programs targeted at training minorities for occupations in which there will indeed be numerous opportunities in the near future.

This article provides a national, statewide, and local picture of the allied health professions. Its goals are to define allied health professions; to locate them in the occupational hierarchy of health-sector employment (tiers of jobs); to describe the current allied health workforce in the United States, Massachusetts, and Boston; and to provide some details on a few of the occupations at the bottom of the health-sector employment structure, where workers who are likely to be recruited for, and derive benefit from, training are found.

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## Definition of Allied Health Professions

In accordance with professional associations and other groups, I define allied health professions as falling into two broad groups. The first consists of semiskilled health technician positions that require some training, either general (high school degree) or specific (a few community college courses). These include such positions as physical therapy assistant, laboratory technician assistant, operating room technician (prepares the operating room and hands doctors and nurses surgical instruments), and electrocardiographic (EKG) technician.<sup>3</sup>

The second set consists of skilled technical allied health occupations, which require anywhere from two to four years of specialized college courses and passing a licensing examination. Historically, these occupations were learned on the job, but in the most recent past professional associations have formed and have established licensing requirements.<sup>4</sup> It is not possible for a worker in the hospital hierarchy to be promoted into these occupations without formal education and an apprenticeship period. Only when a technique is so new that no curriculum exists can they move into it without formal training.<sup>5</sup> New occupations in this category include, for example, radiological technician, respiratory therapist, ultrasound technician, and radiation therapy technician.

A number of these occupations are split between professional-level (four-year) and assistant-level (two-year) training. Training programs aimed at facilitating promotion target the assistant level of allied health professions because it is most proximate to entry-level occupations (see below, Tiers 2 and 1) and because the formal education requirements for assistant positions are lower.

Within these broad guidelines, industry observers define, variously, the specific occupational titles that belong to the allied health field. The occupations to which I devote particular attention include:

- radiological technologist (or technician)
- occupational therapist and assistant
- physical therapist and assistant
- respiratory therapist and assistant
- medical technologist and medical laboratory technician.

The employment statistics describing these occupations vary in level of detail depending on whether they come from national employment surveys such as the *Current Population Survey* or narrower industry surveys such as that conducted by the Massachusetts Hospital Association.

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## Projections

Allied health occupations have been perceived as opportunities for future employment because they have grown in the recent past and are projected to grow further in coming years. National projections to the year 2000 show steady growth in several of these professions. Projected rates of growth from 1988 to 2000 were 66 percent for radiologic technologists and technicians, 59.9 percent for medical record technicians, 57 percent for physical therapists, 52.5 percent for physical and corrective therapy assistants, 48.8 percent for occupational therapists, and 44.7 percent for occupational therapy assistants and aides.<sup>6</sup>

For Massachusetts, 1991–2005 industry projections put the offices of health practitioners, nursing homes, hospitals, and other health services among the activities that will add the largest number of new jobs to the state's economy. Employment projections point to significant growth rates in selected allied health occupations: 60.6 percent for radiologic technologists and technicians, 36.8 percent for medical record technicians, 51.8 percent for physical therapists, 40.5 percent for physical and occupational therapy assistants, 41.3 percent for occupational therapists, and 36 percent for dental hygienists.<sup>7</sup>

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## **Composition of the Health Sector**

Here, consistent with other reports,<sup>8</sup> I define the health sector as comprising the following subsectors: hospitals, nursing and personal care facilities, outpatient care facilities, and other health and allied services.<sup>9</sup> Hospitals employ the largest number by far, in 1990 accounting for 75.6 percent of health-sector employment nationally, 78.7 percent in Massachusetts, and 78.8 percent in Boston.<sup>10</sup>

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## **Employment Structure in the Health Sector**

Roughly speaking, health-sector jobs can be arrayed along a four-tier hierarchical structure. Tier 1, at the bottom, includes service and blue-collar jobs such as nurse's aide and kitchen and housekeeping workers. Tier 2 comprises clerical workers and a few technical assistant workers. Tier 3 comprises skilled technicians such as radiologic technicians and licensed practical nurses. Tier 4 consists of professionals such as registered nurses and physical therapists as well as physicians and administrators (some observers place the latter two separately, in a Tier 5).<sup>11</sup>

Thus, allied health occupations straddle Tiers 3 and 4. As a group, these occupations do not fit neatly into the existing occupational hierarchy of the health sector because they are relatively new, have an evolving scope of responsibilities, and their emergence is somewhat driven by technological innovations. Most fall into Tier 3, but therapists, particularly those requiring a four-year and beyond college degree, fall into Tier 4. Workers in Tiers 1 and 2 represent the pool of potential recruits for training programs leading to the beginning rungs of allied health professions.

Statistics permit an approximation of the evolution over time of the health-sector occupational structure. Table 1 provides estimates of the relative sizes of Tiers 1, 2, and 4 in the nation, in Massachusetts, and in Boston for the health sector as a whole.<sup>12</sup> I describe allied health occupations separately below because they are not adequately captured by Tier 3 employment, which also includes nursing occupations.

Nationally, statewide, and locally, the health-sector employment structure displays a significant concentration of employment in the top and bottom tiers, 4 and 1, which account for about two-thirds of employment nationally, statewide, and locally. Perhaps to a greater degree than other large sectors in the economy, for example, manufacturing, the health sector presents a bimodal structure of jobs because it employs large numbers of professionals and paraprofessionals. A great dispersion of skills and earnings results from the structure within the sector.

Allied health professions, straddling Tiers 3 and 4, are a set of occupations that provide one of the few possibilities for career ladders in the health sector because they are



health-related jobs which current employees can obtain through workplace-based training and education in the health field. They have the potential to be a path for internal vertical movement of the health-sector workforce. Tier 1 workers, with seniority and additional education such as a high school degree, can be promoted to Tier 2 jobs. Once there, they form a substantial pool of potential recruits for apprenticeship programs for allied health jobs in Tier 3.

The 1990 state and local employment picture in the health sector indicates a somewhat greater share of professional and managerial employment — 40.5 and 42.3 percent, respectively — than in the nation as a whole — 39.3 percent. The same pattern holds true for hospitals, which account for almost 79 percent of health-sector employment in both Massachusetts and the Boston urban area and for 76 percent of health employment in the nation. Tier 4 workers account for 43.1 percent of total employment nationally, 43.5 percent statewide, and 43.8 percent in Boston (see Table 2). Hospitals appear to employ relatively fewer Tier 1 workers (4 to 6 percentage points less) and, correspondingly, more Tier 2 and Tier 3 workers than the health sector as a whole. This distinction reflects the fact that hospitals provide specialized medical care while other segments of the sector, such as nursing homes and personal care facilities, provide a broader range of less technical services. We can expect to find both a greater pool of Tier 2 workers and more opportunities for Tier 3 employment in hospitals than in other subsectors.

Table 1

**Lower and Upper Tiers of the Health Sector**  
(Occupational Structure: Number and Percentage of Total Employment)

	United States	Massachusetts	Boston (PSMA)
<i>Tier 4: Professional and management workers</i>	1,617,357 39.3%	65,004 40.5%	36,998 42.3%
<i>Tier 2: Office and clerical workers</i>	687,454 16.7%	28,440 17.7%	16,256 18.6%
<i>Tier 1: Service and blue-collar workers<sup>a</sup></i>	1,179,897 28.7%	43,434 27.1%	21,684 24.8%
<i>Total Employment</i>	4,110,736	160,577	87,373

Source: U.S. Equal Employment Opportunity Commission, *Job Patterns for Minorities and Women in Private Industry, 1990* (Washington, D.C.: U.S. Government Printing Office [hereafter GPO], 1990).

Note: The health sector includes SICs 805, 806, 808, and 809 (see text). Tier 3 employment is not reported because it could not be computed accurately (see text). As a result, the tier worker figures do not add up to total employment.

<sup>a</sup>Blue-collar workers include craft workers, operatives, and laborers. There are few craft workers in the health sector, so little accuracy is lost by including them in Tier 1.

## Racial/Ethnic Distribution in Tiers 1 and 2 Employment

Large pools of workers in Tiers 1 and 2, where the greatest numbers of minority workers are employed, are poised for potential advancement to Tier 3 positions with appropriate education and apprenticeship. In the health sector as a whole, minorities tend to be overrepresented in Tier 1 employment relative to their share of total employment, an indication of their concentration at the bottom of the job structure. This pattern holds true for the nation, for Massachusetts, and particularly for Boston (see Table 3). Black workers' share of Tier 1 employment is about twice their share of total employment. Non-Hispanic blacks account for 29.4 percent of Tier 1 employment in the nation, and for 18.8 and 28.6 percent in the state and city, respectively. In contrast, the non-Hispanic black share of total, all tiers, health-sector employment is 15.6 percent nationally, 8.6 percent in Massachusetts, and 12.3 percent in Boston.

The representation of Hispanics in Tier 1 jobs is about twice as high as their share of total health employment. Hispanics account for about 7 percent of Tier 1 employment nationally, statewide, and locally. In comparison, the Hispanic share of total health-sector employment is 4.6 percent nationally, 2.9 percent statewide, and 3.1 percent in Boston. Although they are present in large numbers in Tier 2 employment, Hispanics are not as highly concentrated there.

Table 2

**Lower and Upper Tiers of the Health Sector**  
(Occupational Structure: Number and Percentage of Total Employment)

	United States	Massachusetts	Boston (PSMA)
<i>Tier 4: Professional and management workers</i>	1,339,513 43.8%	55,011 43.1%	30,713 43.5%
<i>Tier 2: Office and clerical workers</i>	554,935 17.9%	25,053 19.8%	14,065 20.4%
<i>Tier 1: Service and blue-collar workers<sup>a</sup></i>	711,242 22.9%	25,874 20.5%	13,291 19.3%
<i>Total Employment</i>	3,107,429	126,324	68,816

Source: U.S. Equal Employment Opportunity Commission, *Job Patterns for Minorities and Women in Private Industry, 1990* (Washington, D.C.: GPO, 1990).

Note: SIC 806. The health sector includes SICs 805, 806, 808, and 809 (see text). Tier 3 employment is not reported because it could not be computed accurately (see text). As a result, the tier worker figures do not add up to total employment.

<sup>a</sup> Blue-collar workers include craft workers, operatives, and laborers. There are few craft workers in the health sector, so little accuracy is lost by including them in Tier 1.

In the hospital sector per se, minorities are significantly overrepresented in Tier 1 employment and somewhat overrepresented in Tier 2 employment as well (see Table 4). Non-Hispanic blacks represent 28 percent of Tier 1 hospital employment in the United States as a whole, almost 19 percent in Massachusetts, and 29 percent in Boston. Their share is more than twice as high as that of black workers in total hospital employment nationally, regionally, and locally. Black workers are slightly overrepresented in Tier 2 employment as well.

Hispanics account for about 7 percent of Tier 1 employment in hospitals nationally, statewide, and locally — almost twice their share of total hospital employment. Hispanics are also slightly overrepresented in Tier 2 employment. Asian workers are not significantly overrepresented in Tier 1 and are, if anything, underrepresented in Tier 2 employment relative to their share of total employment. Numbers for Native American workers are too small for valid comparisons of employment share.

Racial/ethnic minorities, then, may benefit from workplace-based training programs because they concentrate in Tier 1 and Tier 2 occupations, are underrepresented in allied health occupations and are in higher education programs for health professions.

**Demographic Characteristics of Workers in Allied Health Occupations**

To describe the allied health professions, I use the 1990 census figures for Massachusetts and the city of Boston itself from the *Equal Employment Opportunity File*, which reports numbers of workers employed in selected occupations regardless of the

Table 3

**Minority Representation in Tiers 1 and 2 of the Health Sector**

	United States (percentage)	Massachusetts (percentage)	Boston (PSMA) (percentage)
<i>Tier 1: Service and blue-collar workers<sup>a</sup></i>			
Non-Hispanic whites	59.7	72.0	61.2
Non-Hispanic blacks	29.4	18.8	28.6
Hispanic	7.6	7.1	7.6
Asian	2.7	1.8	2.5
Native American	0.5	0.4	0.2
<i>Tier 2: Office and clerical workers</i>			
Non-Hispanic whites	76.9	86.0	80.1
Non-Hispanic blacks	15.3	9.5	14.1
Hispanic	5.6	2.7	3.3
Asian	2.0	1.8	2.5
Native American	0.3	0.1	0.1
<i>Total Health Sector Employment</i>			
Non-Hispanic whites	75.0	86.4	81.9
Non-Hispanic blacks	15.6	8.6	12.3
Hispanic	4.6	2.9	3.1
Asian	3.6	1.9	2.6
Native American	0.3	0.1	0.1

Source: U.S. Equal Employment Opportunity Commission, *Job Patterns for Minorities and Women in Private Industry, 1990* (Washington, D.C.: GPO, 1990).

<sup>a</sup>The health sector includes SICs 805, 806, 808, and 809 (see text).

industrial sector in which they work.<sup>13</sup> Needless to say, most are in the health sector. The occupations reported below encompass most of these professions but may aggregate individual occupations. For example, the “other health technicians” category includes medical technologists and medical lab technicians, two occupations for which detail would be useful.<sup>14</sup>

## Gender Composition

Like many health-related occupations, except for physicians and administrators, allied health is a field dominated by females. Nationwide, they account for highs of 98.4 percent among dental hygienists and 93.5 among speech therapists. They are concentrated to a lesser extent among respiratory therapists at about 60 percent. Women workers fill 72.3 percent of radiologic technician positions. These numbers are substantially higher than the female share of all occupations in the civilian labor force nationwide of about 46 percent. This pattern differs little in Massachusetts, where women also predominate primarily among speech therapists (93.5 percent) and dental hygienists (98.4 percent) and least among respiratory therapists (62.6 percent). Radiologic technicians are 81.9 percent female.

However, women have much less representation in the allied health workforce of the Boston metropolitan area, a situation peculiar to employment in the urban setting. They account for no more than 89.7 percent of speech therapists and for a low 56.3 percent of the “other therapist” category. Male workers account for more than 30 percent of

Table 4

### Minority Representation in Tiers 1 and 2 of the Health Sector

	United States (percentage)	Massachusetts (percentage)	Boston (PSMA) (percentage)
<i>Tier 1: Service and blue-collar workers<sup>a</sup></i>			
Non-Hispanic whites	61.1	72.7	60.5
Non-Hispanic blacks	28.1	18.8	29.0
Hispanic	7.8	6.4	7.4
Asian	2.6	2.0	2.9
Native American	0.4	0.1	0.2
<i>Tier 2: Office and clerical workers</i>			
Non-Hispanic whites	77.6	86.1	79.5
Non-Hispanic blacks	14.9	9.5	14.5
Hispanic	5.4	2.6	3.4
Asian	1.8	1.8	2.6
Native American	0.3	0.1	0.1
<i>Total Health Sector Employment</i>			
Non-Hispanic whites	78.0	88.0	83.2
Non-Hispanic blacks	13.8	7.5	11.1
Hispanic	4.4	2.4	2.8
Asian	3.5	2.0	2.8
Native American	0.3	0.1	0.1

<sup>a</sup>SIC 806.



employment in five allied health occupations, whereas only in one occupation, respiratory therapist, do women have that distinction, both nationally and statewide. In Boston, women fill only 60.7 percent — more than 10 percentage points below the national average of 72.3 percent — of radiologic technician positions. Given that women in Tier 2 concentrate in clerical employment, future training of Tier 2 workers may result in an increase of females in allied health occupations in Boston as well. It is possible that Boston area employers, mostly large teaching private hospitals, hire relatively more allied health workers with B.Sc. degrees, which few women earn.

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### **Racial/Ethnic Composition**

Non-Hispanic white workers dominate employment in allied health nationally, statewide, and in the city of Boston (see Table 5; also see Tables 8 and 9 in “Employment Trends in the Allied Health Professions” for U.S. and Massachusetts data).<sup>15</sup> In the United States as a whole, non-Hispanic black female workers account for 16 percent of dietitians and 13.5 percent of health record technicians. Black males reach a high representation of 4.4 percent among respiratory therapists. Non-Hispanic black females account for 5.4 percent of the civilian labor force and males for 4.9 percent. Among radiologic technicians, black women fill 5 percent of positions and black men 2.7 percent. In Massachusetts, black workers are even less of a presence, forming a smaller share of the state’s workforce than of the U.S. workforce — 4.2 percent (2.1 percent each for males and females — of the Massachusetts workforce as compared with 10.3 percent of the nation’s workforce). In the state, black women account for 7.1 percent of health record technicians and 6.8 percent of dietitians but only 0.4 percent of radiologic technicians. In the city of Boston, non-Hispanic black women fill positions as health record technicians (29.9 percent), clinical lab technicians (26.3 percent), and dietitians (25.4 percent), but they are virtually nonexistent in the ranks of radiologic technicians. Non-Hispanic black females account for 10.8 percent and non-Hispanic black males for 10.3 percent of the civilian labor force.

The pattern of Hispanic allied health workers in Massachusetts and Boston differs from the national picture. Nationwide, Hispanic women account for 6.2 percent of health record technicians, 5 percent of other health technicians, and 2.5 percent of radiologic technicians. Hispanic males represent 3 percent of radiologic technicians. In contrast, in Massachusetts, Hispanic women represent 5.1 percent of dietitians, 3.3 percent of health record technicians, 3.2 percent of speech therapists, and 1.2 percent of radiologic technicians. Hispanic women are particularly concentrated among dietitians, considering that their share of the state’s total workforce is 1.5 percent. Hispanic males, 1.9 percent of the state labor force, comprise about 1 percent of Massachusetts employment among dietitians, clinical lab technicians, other health technicians, and radiologic technicians. In Boston, Hispanic female workers are “overrepresented” in a few allied health occupations relative to their 3.8 percent share of the city labor force. They are more prominent among speech therapists (28.2 percent), dietitians (13.8 percent), and health record technicians (12.9 percent). Hispanic males, 4.9 percent of the state labor force, account for 5.4 percent of dietitians, 4.5 percent of speech therapists, and 4 percent of clinical lab technicians. Hispanic men and women are almost entirely absent from radiologic technician employment.

Table 5

**City of Boston Racial/Ethnic Composition  
of Allied Health Occupations**

	White		Black		Hispanic		Asian		Total
	Non-Hispanic Male (percentage)	Non-Hispanic Female (percentage)	Non-Hispanic Male (percentage)	Hispanic Male (percentage)	Hispanic Female (percentage)	Asian Male (percentage)	Asian Female (percentage)		
Dietician	9.1	34.8	4.3	5.4	13.8	0.0	7.2	55.2	
Respiratory therapist	23.1	50.6	9.0	0.0	0.0	0.0	0.0	15.7	
Occupational therapist	18.8	81.3	0.0	0.0	0.0	0.0	0.0	12.8	
Physical therapist	25.6	68.7	3.5	0.0	0.0	2.2	0.0	22.7	
Speech therapist	5.8	53.2	0.0	4.5	28.2	0.0	0.0	15.6	
Other therapists	41.6	43.3	2.0	0.0	0.0	0.0	3.4	23.9	
Clinical lab technician	11.8	37.0	8.3	4.0	2.4	7.3	2.4	1,090	
Dental hygienist	11.3	71.5	0.0	4.0	0.0	7.3	9.9	151	
Health record technician	17.0	34.0	0.0	0.0	12.9	3.1	3.1	194	
Radiologic technician	15.2	58.2	24.2	0.0	0.0	0.0	2.5	244	
Other health technicians	27.3	43.2	4.0	2.9	6.9	1.8	1.0	1,464	
Civilian Labor Force	33.2	31.4	10.3	4.9	3.8	2.5	2.1	314,997	

Source: U.S. Department of Commerce, Bureau of the Census, *1990 Census of Population and Housing, Equal Employment Opportunity File*, January 1993.

Note: Because their numbers are so small, Native Americans and "other" race workers are not reported. In the U.S. civilian labor force, "other" males and "other" females account for 0.4 percent each.

Nationwide, female Asian workers, 1.3 percent of the labor force, account for 4.6 percent of clinical lab technicians and 3.9 percent of dietitians. Asian men, 1.5 percent of the labor force, account for 1.4 percent of clinical lab technicians. Men and women together are only about 1 percent of radiologic technicians. In Massachusetts, Asian women, 0.9 percent of the labor force, account for 3.2 percent of dietitians and 2.7 percent of clinical lab technicians. Asian men, 1.1 percent of the labor force, represent 2.3 percent of clinical lab technicians. Fewer than 1 percent of radiologic technicians are Asian males and females. Asian workers have a greater presence in Boston allied health employment. Asian women — 2.1 percent of the labor force — reach 9.9 percent of dental hygienists, and 7.2 percent of dietitians. Males — 2.5 percent of the labor force — account for more than 7 percent of employment among clinical lab technicians and dental hygienists. Asian women comprise 2.5 percent of radiologic technicians; Asian males are totally absent from this occupation.

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## **Allied Health Professions in Massachusetts and Boston**

### ***Hospital Vacancy Rates***

In the late 1980s and early 1990s, Massachusetts hospitals experienced high vacancy rates for allied health professions. The vacancy rate is defined as the ratio of vacant full-time equivalents to the total number of budgeted full-time equivalents for a position. These vacancies, combined with anticipation of a limited number of graduates from regional allied health degree programs, spurred worries about sustained future labor shortages as well as an interest in looking to Tier 2 workers as a pool of potential trainees for some technician occupations. A review of results from Massachusetts Hospital Association (MHA) periodic surveys of member hospitals, which focus on more specialized therapist occupations than those discussed above, shows that the hospital association selects a few occupations as likely to experience shortages.<sup>16</sup>

Statewide, vacancy rates for acute-care hospitals, the only ones for which trends are available, were high, but they improved for most occupations between 1988, the year systematic surveys began, and 1992.<sup>17</sup> Vacancy rates declined, most notably, for radiologic technologists, from 14.8 in 1988 to 2.3 in 1992.

By 1992 the surveyed occupations, which retain high vacancy rates for the state as a whole, are physical therapist (15.8), occupational therapist (7.1), radiation therapy technologist (14), and nuclear medicine technologist (7.6). The latter two, which are relatively new, are allotted a small number of budgeted positions. With the exception of physical therapists, statewide vacancy rates tend to be lower in acute-care institutions than in all other types of hospitals. Greater Boston acute-care hospitals tend to have lower vacancy rates than the statewide average. Vacancy rates are highest for radiation therapy technologists (8.9) and physical therapists (8.4). The 1992 vacancy rate for radiologic technologists was 2.4.

### ***Wage Levels***

According to the MHA compensation survey, wage levels rose steadily from 1985 to 1992, partly in response to high vacancy rates in a number of occupations in the early 1980s.<sup>18</sup> As wages rose, vacancy rates declined. This MHA survey particularly highlights wage levels for therapist positions. Because these correspond to four-year-degree



levels and command higher rates of pay than many other allied health occupations, they are not indicative of wage levels for those occupations as a whole.<sup>19</sup> In 1992 hourly wages reached a high of \$20 for radiation therapy technologist, an occupation with a vacancy rate that remained high from 1988 to 1992. The same year, radiologic technologists received an hourly rate of about \$15 statewide and \$17 in greater Boston, a moderate increase from 1988 levels. This occupation witnessed a steady decline in vacancy rate from 1988 to 1992. Medical lab technicians, the only assistant position surveyed, had an hourly wage of about \$14. The four occupations that retained high vacancy rates from 1988 to 1992 — physical therapist, occupational therapist, radiation therapy technologist, and nuclear medicine technologist — also witnessed significant wage growth over the same period.

As will be seen below, wages for allied health therapists and technicians are substantially higher than those for Tier 2 and Tier 1 workers, thus the appeal of expanding training opportunities for workers in the latter tiers.

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### **National Allied Health Workforce**

To obtain a more detailed picture of allied health occupations, I relied on the 1992 *Current Population Survey* (CPS), which provides a national sociodemographic picture of the workforce in allied health occupations and in specific subsectors of the health services industry.<sup>20</sup> This information cannot be obtained from employer surveys by professional associations, from census files, which provide occupational information only, or from other regional data sources. Data reported are for jobs in four sectors: hospitals, physicians' offices, nursing homes, and all other health facilities.<sup>21</sup>

The CPS includes the following occupations: dietitians (97); respiratory therapists (98); occupational therapists (99); physical therapists (103); speech therapists (104); other therapists (105); clinical lab technicians (203); dental hygienists (204);<sup>22</sup> health record technologists and technicians (205); radiologic technicians (206); and other health technicians (208).

Unfortunately, these broad categories do not allow differentiation of workers with two-year degrees from those with four-year degrees. However, it is most likely that the therapist categories include large numbers of B.S. degree holders while the technician categories include large numbers of associates degree holders.<sup>23</sup>

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### **Allied Health Professions vis-à-vis Nursing Occupations**

To place allied health professions in the socioeconomic context of better-known health occupations, I compare the sociodemographic and wage characteristics of those professionals with personnel in nursing occupations, a large job category in the health sector.

#### ***Sociodemographic Profile***

The *Current Population Survey* national sample represents 3,397,000 workers in the health sector in nonprofessional medical occupations. (Details for particular occupations may be sparse because of the small sample size.) The health sector includes allied health, nursing (R.N.'s and LPNs, physicians' assistants), and pharmacists. Of these, 81.9 percent are non-Hispanic whites, 8.2 percent are non-Hispanic blacks, 3.9 percent are Hispanic, and 4.1 percent are Asian. Hospitals account for 66.2 percent of



employment in the sector, nursing homes and personal care facilities for 10.3 percent, physicians' offices for 13.5 percent, and all other health facilities for 10 percent.

Allied health occupations account for almost 35 percent of nonprofessional medical employment in the health sector, amounting to 10.9 percent — 1,185,000 of 10,875,000 — of total health-sector employment in all occupations: they account for 13.1 percent of employment in hospitals, 12.3 percent in physicians' offices, 2.2 percent in nursing homes, and 13.1 percent in all other health facilities. (The hospital sector is covered in greater detail below.)

### ***Gender Composition***

As already noted in national occupational statistics, allied health occupations are primarily female although less so than nursing occupations, which are more than 94 percent female. Overall, women account for 81.9 percent of total allied health employment. The degree of female concentration varies across health subsectors, however. Women workers account for 76.1 percent of such employment in hospitals, 89.3 percent in personal care facilities, 81.4 percent in other health services, and 94.7 percent in physician's offices. Both personal care and physicians' offices employ personnel in less technical allied health occupations, which may account for the greater concentration of women in these subsectors.<sup>24</sup>

### ***Racial/Ethnic Composition***

Across all health subsectors, non-Hispanic white workers account for 80.7 percent of allied health employment compared with 82.5 percent of nursing employment. Non-Hispanic blacks represent 7.8 percent of employment. The Hispanic and Asian shares of employment are 5.2 percent and 4.3 percent, respectively.<sup>25</sup>

### ***Earnings***

Total wages and salaries in 1991 (the full year prior to the survey) for allied health workers provide an indicator of average compensation levels. Although the survey asked respondents about their wages and the industry and occupation of their longest job in 1991, it did not take account of hours worked. In hospitals, mean allied health earnings were \$24,261 per year compared with \$30,501 for nursing occupations (R.N's and LPNs). Allied health workers earned higher wages in hospitals than in other health subsectors. Yearly earnings of \$24,261 in hospitals contrasted with mean earnings of \$16,421 for allied health employees in nursing homes and personal care facilities, \$17,981 in physicians' offices, and \$22,622 in other health facilities.

### ***Education***

In keeping with the professional requirements of their occupations, allied health workers reported higher levels of education than the population at large. In the health sector as a whole, 18.3 percent of this workforce had a high school degree, 21.4 percent some college education, 18.4 percent an associate degree, 29.7 percent a four-year-college degree, and 9.7 percent some postgraduate education. These distributions were similar in the hospital sector, which accounted for the bulk of allied health employment.<sup>26</sup>

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## Allied Health Workers: Hospitals

Each health subsector has its own peculiar occupational structure, with hospitals the largest employer. As such, they comprise the one subsector for which the CPS yields a significant sample size.

### *Gender Distribution of Hospital Employees*

Occupations rank by order of female preponderance as follows: health record technicians, 98.9 percent; dietitians, 97.6 percent; occupational therapists, 87.6 percent; physical therapists, 82.8 percent; clinical lab technicians, 76.9 percent; respiratory therapists, 73.5 percent; and radiologic technicians, 70 percent. Miscellaneous allied health occupations have relatively lower female concentrations: other health technicians, 66.8 percent, and other therapists, 63.9 percent.<sup>27</sup> These hospital-sector results are consistent with the distributions reported in the 1990 census.<sup>28</sup>

### *Racial/Ethnic Composition of Hospital Employees*

Non-Hispanic whites accounted for 78.6 percent of allied health employment in hospitals; non-Hispanic blacks for 10.4 percent; Asians for 4.9 percent; and Latinos for 4.4 percent.<sup>29</sup>

The predominance of non-Hispanic whites varied across occupations, however. While they accounted for almost all the physical therapists and speech therapists, it must be noted that the sample sizes were too small to make their percentage estimates entirely accurate. Other racial/ethnic groups were more visible in other occupations. For example, white workers accounted for 89.8 percent of radiologic technicians; 87.7 percent of respiratory therapists; 87.6 percent of occupational therapists; 86 percent of dietitians; 76.3 percent of health record technicians; and 75 percent of clinical lab technicians.

Occupations with significant representation of non-Hispanic black workers were other health technicians, 18.2 percent; occupational therapists, 12.4 percent; clinical lab technicians, 10.6 percent; and dietitians, 9.8 percent. Hispanics were noticeably present only among health record technicians, 11.7 percent; other health technicians, 9.4 percent; radiologic technicians, 3.3 percent; and clinical lab technicians, 3 percent. Asians represented 11 percent of clinical lab technicians, the only occupation in which their sample numbers were sufficient for a percentage share to be reliable.

### *Yearly Earnings in Hospitals*

The earnings reported here were for 1991, the year prior to the survey.<sup>30</sup> Hospital-sector earnings vary not only across allied health occupations; they can also diverge within occupation. Occupations like clinical lab technicians, which include both associate and B.S. degree holders, display significant heterogeneity in earnings not captured in average earnings figures. Again, the following amounts were not controlled for hours worked or years of experience.

Speech therapists had average yearly wage and salary earnings of \$32,155; occupational therapists, \$31,313; respiratory therapists, \$28,106; and physical therapists, \$26,852; all other therapists, \$26,543; dietitians, \$22,870; clinical lab technicians,

\$24,722; radiologic technicians, \$23,435; and all other technicians, \$21,688. Only full-time workers had yearly earnings higher than the occupational averages for the full-time and part-time workforces combined.

Male and female yearly earnings differed somewhat within occupational groupings. For example, male respiratory therapists in the survey earned \$31,813 while females earned \$26,769. Male clinical lab technicians earned \$28,889 while women earned \$23,470. Male radiologic technicians earned \$21,992 yearly while females reported \$24,055. Female health record technicians had yearly earnings of \$18,675, but there were not enough males in this occupation to calculate a comparative figure. It is difficult to isolate the cause of these differences in the absence of controls for hours worked, degrees held, and years of experience, although some of the variations remained among full-time workers, suggesting that hours worked were not the only cause of difference across gender. The cell count of cross tabulation of earnings by gender and education would have been too small to provide an accurate earnings average. Among full-time workers, the gap between male and female earnings in each occupation narrows because female earnings increase while male earnings remain static for the most part. This gap does not disappear, however; women's shorter work hours are partially, but not completely responsible for the differential in male and female yearly earnings. Additionally, measures of wage discrimination based on gender were difficult to estimate from these small samples.<sup>31</sup>

No clear pattern of earnings disparity across racial/ethnic groups emerged from the CPS national sample. Small size once again permits highlighting for only a few occupations. Among clinical lab technicians, non-Hispanic whites had yearly earnings of \$23,803, below the occupation average of \$24,722, as did non-Hispanic blacks at \$23,125, while Asians had well-above-average earnings of \$33,213. Hispanic clinical lab technicians reported below-average earnings of \$23,488.

Among radiologic technicians, non-Hispanic whites earned \$23,598, slightly above the average \$23,435 for the occupation, while Hispanics enjoyed significantly above-average earnings of \$31,340. All other health technicians had yearly earnings of \$19,876, which was below the average for the category of \$21,688. White Hispanic workers had above-average yearly earnings of \$25,704, as did non-Hispanic blacks and Asians, \$25,438 and \$26,649, respectively. Like gender differences in earnings, these figures do not take into account the inequalities in hours worked or degrees held. Yearly earnings for full-time workers were higher in all occupations and for all groups, suggesting that work hours do not account for discrepancies across racial/ethnic groups.

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### **Selected Tier 2 and Tier 1 Hospital Occupations**

Tier 2 and Tier 1 hospital employees constitute the pool of potential trainees for some A.S.-degree-level allied health occupations such as radiologic technicians and clinical lab assistants.<sup>32</sup> For this reason, I report some characteristics of Tier 2 and Tier 1 occupations, secretary and nurse's aide, respectively. The *Current Population Survey* reported sufficient numbers for cross tabulation — 250,000 secretaries and 367,000 nurse's aides. Virtually all secretaries were female, with non-Hispanic whites accounting for 70.4 percent of them. Minority workers have a significant share in the occupation: 24.4 percent for non-Hispanic blacks and 4.0 percent for Hispanics. Secretaries' yearly earnings were substantially lower than those for allied health occupations,



averaging \$15,925. Non-Hispanic white secretaries earned less on average, \$15,315, than either blacks' \$17,287 or Hispanics' \$15,496. Most secretaries, 40.7 percent, have a high school diploma, and 34.4 percent of them had some college training, probably in secretarial courses.

Nurse's aide, a large Tier 1 occupation, is dominated by females — with 81.5 percent — but less so than secretaries. Many hospital minority workers concentrate in this occupation. Non-Hispanic whites account for 50.1 percent of employment, non-Hispanic blacks for 40.9 percent, and Hispanics for 5.7 percent. Nurse's aides' yearly earnings, \$14,967, are substantially lower than those of allied health workers and somewhat lower than those of secretaries for all groups.

Allied health occupations form a middle range of positions in a sector with large numbers of low-tier and highly professional jobs and few positions between these two extremes. Particularly in hospitals, fairly high vacancy rates may provide the impetus to train the existing workforce for technician-level positions, thereby building a workforce which, once trained, will remain committed to health-sector employment. Radiologic technicians, an occupation for which some Tier 2 workers have received training, has experienced reduced vacancy rates in Massachusetts hospitals in recent years. Therefore, broadening the range of positions for which workers can obtain training will continue to improve individual worker's chances of benefiting from improved employment opportunities generated by vacancies in all allied health occupations. ♿

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## Notes

1. Jenny Laster, "Alternate Models for Providing Training for Low-level Hospital Workers to Fill Skilled Nursing and Technical Positions," master's thesis, Kennedy School of Government, Harvard University, April 11, 1989.
2. Economic Development and Industrial Corporation/Boston, *The Missing Rung: A Study of Career Opportunities for Boston Residents in Boston Hospital and Long-term facilities*, April 1992, 1; EDIC/Boston, *Who Benefits from Biomed? Real Jobs for Boston Residents*, December 1990.
3. Laster, "Alternate Models," 7.
4. Ibid.
5. Ibid.
6. Figures from the Department of Labor's *Occupational Outlook Handbook, 1990–1991*, cited in *Modern Healthcare*, May 14, 1990, 10.
7. *Massachusetts Department of Employment and Training, Massachusetts Industry Projections: 1991–2005*, December 1992; Massachusetts Department of Employment and Training, *Career Moves*, April 1993.
8. Michael E. Porter, Rebecca E. Wayland, and C. Jeffrey Grogan, *Toward a Shared Economic Vision for Massachusetts*, Harvard Business School, November 5, 1992.
9. These correspond to Standard Industrial Classification (SIC) codes 805, 806, 808, and 809.
10. U.S. Equal Employment Opportunity Commission (EEOC), *Job Patterns for Minorities and Women in Private Industry, 1990* (Washington, D.C.: U.S. Government Printing Office, 1990). These employment statistics cover private health-sector establishments, including not-for-profit and para-public ones.



11. Laster, "Alternate Models."
12. Given the broad occupational groupings used for the U.S. EEOC data, I have approximated Tier 1 with all service and blue-collar workers (craft, operatives, and laborers). Craft workers are not in Tier 1, but there are so few of them in the health sector that little is achieved by excluding them from the category. Tier 2 employment, with office and clerical workers, is approximated. Tier 4, with professional and managerial workers, is approximated. In this EEOC (1990) data series, statistics refer to the Boston metropolitan area (PMSA).
13. As previously noted, I analyzed allied health occupations separately, not as part of Tier 3. Only some specific occupations are tracked by the *1990 Census EEOC File*. Additionally, the numbers reported apply to these occupations in all economic sectors, not solely the health sector. Thus, these numbers include allied health workers employed in settings such as industrial clinics in manufacturing. (U.S. Department of Commerce, Bureau of the Census, *1990 Census of Population and Housing, Equal Employment Opportunity File*, January 1993.)
14. Tables for this and the following sections are available in F. Carré, "Employment Trends in the Allied Health Professions," Center for Labor Research, University of Massachusetts Boston, May 1995. Tables 5 to 7 provide employment levels in a number of allied health professions in the United States, Massachusetts, and Boston.
15. See *ibid.*, Tables 8 and 9, for U.S. and Massachusetts data.
16. The surveys emphasize therapist rather than technician positions: physical therapist, occupational therapist, medical technologist, nuclear medicine technologist, ultrasound technologist, and radiation therapy technologist. Additionally, over time the composition of the pool of hospitals responding to the survey may change slightly. Massachusetts Hospital Association (MHA), *Career Opportunities in Health Care*, 1989; MHA, *Health Care Personnel: Avoiding a Crisis in the 1990s*, September 1989; MHA, *Manpower Statistics Survey Results: Allied Health Professions Vacancy Rates*, February 1992 data summary, May 1992.
17. Carré, "Employment Trends," Table 11.
18. The Massachusetts Hospital Association provided survey excerpts.
19. In Massachusetts, therapist positions account for 33.2 percent of all allied health positions — the balance consists of technicians; in Boston, therapists account for 55.9 percent of allied health jobs. Nationally the share is 29.7 percent. See Carré, "Employment Trends," Tables 5–7 and 14.
20. U.S. Department of Commerce, *Current Population Survey*, March 1991.
21. Private medical professionals' offices fall into a category that combines SICs 812, 820, 821, 822, and 831; all other health facilities are in a grouping slightly different from that used by the EEOC.
22. Almost all dental hygienists are employed in dentists' offices.
23. Respiratory therapists, physical therapists, and clinical lab technicians include both four-year (B.S.) and two-year (A.S.) levels.
24. Carré, "Employment Trends," Table 15.
25. *Ibid.*, Table 16.
26. See *ibid.*, Table 17, for details of each subsector.
27. *Ibid.*, Table 18. There were insufficient sample cases to give reliable estimates of the gender distribution of employment for occupational therapists and speech therapists. In other surveys these also tend to be dominated by females.
28. U.S. Department of Commerce, *Equal Employment Opportunity File, 1990*.
29. Carré, "Employment Trends," Table 19.
30. See *ibid.*, Tables 20 and 21, for detailed results.
31. For a discussion of wage discrimination, see Francine D. Blau and Marianne A. Ferber, *The Economics of Men, Women, and Work* (Englewood Cliffs, N.J.: Prentice-Hall, 1986), and R. L. Oaxaca, "Male-Female Wage Differentials in Urban Labor Markets," *International Economic Review* 14 (1973): 693–709.
32. See Carré, "Employment Trends," Tables 22–25, for details.