

# Therapeutic Services

## Rehabilitation Professions

Physical Therapist and Physical Therapist Assistant

Occupational Therapist and Occupational Therapist Assistant

Athletic Trainer

Recreational Therapist

Speech-Language Pathologist and Assistant and Audiologist

Respiratory Therapist and Respiratory Therapist Technician

Dietitian and Dietetic Technician

Surgical Technologist

## Physician Assistant

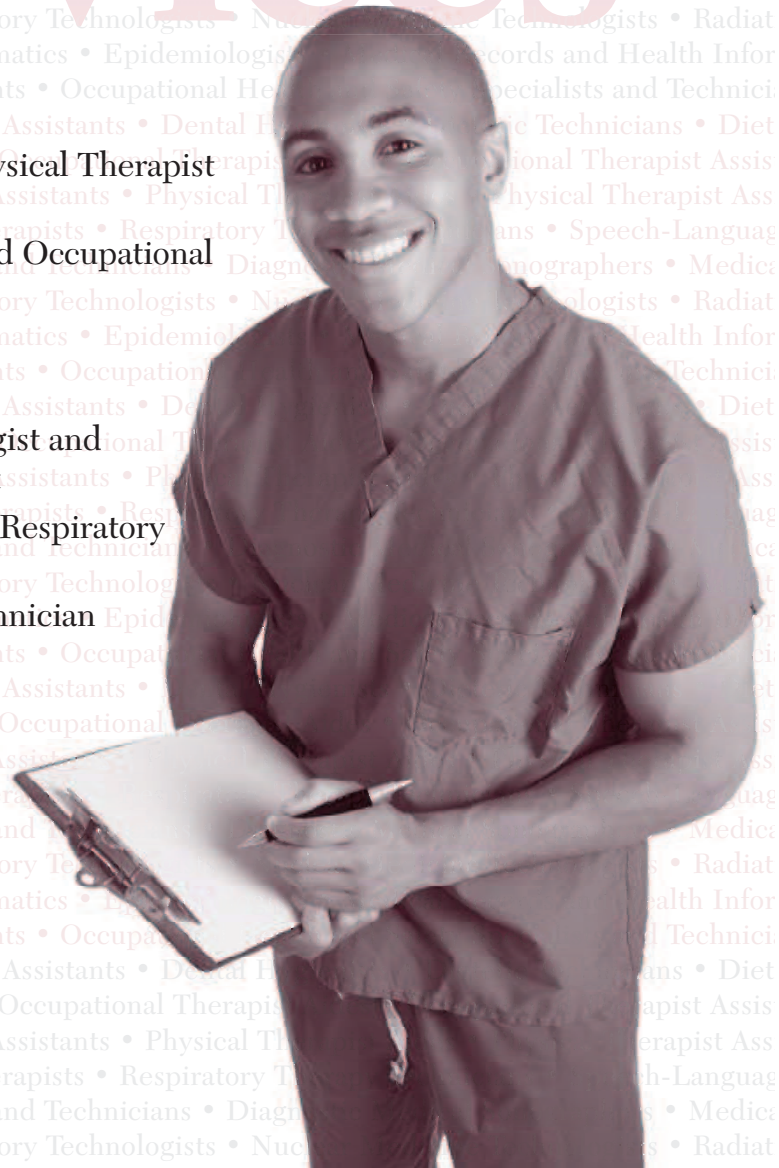
## Emergency Medical Services

Emergency Medical Technician (EMT)

## Dental Services

Dental Hygienist

Dental Assistant



# *Rehabilitation Professions*

---

## **Physical Therapist and Physical Therapist Assistant**

Physical therapists (PT) evaluate and treat patients with the goal to prevent, detect, eliminate, or minimize pain and physical dysfunction. Physical therapist assistants (PTA) provide physical therapy services under the direction and supervision of physical therapists.

### **Status**

- Employment of physical therapists (PT) is projected to increase by 30.3 percent during 2008–2018 (3 percent annually) according to BLS.
- As of July 2009, 201 physical therapy programs nationally converted to the doctor of physical therapy (D.P.T.). By 2008 all programs in Tennessee converted to D.P.T. Physical therapists must also pass a licensure examination before practicing.
- In Tennessee, there are five accredited physical therapy programs and seven physical therapist assistant programs.
- The outlook for physical therapists in Tennessee is a competitive market with the number of training completers greater than job openings expected.
- Physical therapist assistants in Tennessee is rated as a favorable market with more job openings expected annually than training completers in a recent year.
- JAR hospital vacancy data indicates a shortage of PT/PTA of 7.8 percent for 2008. Local vacancy rates may vary (Appendix D) with some districts, such as West and Chattanooga showing 23.7 percent and 9.7 percent vacancy rates respectively.
- Population ratio data indicate a higher ratio for physical therapists and physical therapist assistants in Tennessee than that of the nation.

### **Description**

The field of physical therapy requires the evaluation and treatment of patients with movement dysfunctions such as those

resulting from accidents, trauma, stroke, multiple sclerosis, cerebral palsy, nerve injuries, amputations, fractures, arthritis, and heart and respiratory diseases. Treatment is designed to relieve pain, improve functional mobility, maintain cardiopulmonary functioning, and limit the disabilities of people suffering from these injuries or diseases.

Physical therapists (PT) evaluate and treat patients with the goal to prevent, detect, eliminate, or minimize pain and physical dysfunction. Physical therapists provide inpatient, outpatient, and community-based services for patients and educate family members to provide therapy at home.

Physical therapist assistants (PTA) provide physical therapy services under the direction and supervision of a physical therapist. Under supervision, physical therapist assistants treat patients according to a plan of care, train patients in exercises and activities of daily living, use special equipment, administer modalities and other treatment procedures, and report to the physical therapist on the patient's response.

Physical therapist and physical therapist assistant positions exist in a variety of settings and facilities. Individuals may work in rehabilitation, community health, industry, sports, research, education, or administration.

## **Educational Preparation**

Professional preparation for physical therapists is typically obtained in doctoral degree programs accredited by the American Physical Therapy Association's Commission on Accreditation in Physical Therapy Education. In 1998 Tennessee's state supported programs in physical therapy were converted to entry-level master's programs and by 2008 all programs have converted to doctor of physical therapy (D.P.T.) programs. Nationally in 2002, all physical therapy programs were required to offer master's or doctor of physical therapy degrees. As of July 2009, 201 physical therapy programs nationally have converted to the D.P.T. Physical therapists must also pass a licensure examination before practicing.

Physical therapist assistants receive training from associate degree programs that are accredited by the Commission on Accreditation in Physical Therapy Education.

## National Supply and Demand

BLS data for 2008 indicates that physical therapists held about 249,300 jobs nationally, with over two-thirds of them being in hospitals or physical therapist's offices. The number of jobs is greater than the number of practicing physical therapists because some physical therapists hold two or more jobs. For example, some may work in a private practice but also work part-time in another health facility. Physical therapists held 185,500 jobs in 2008. Both positions are expected to grow with projections of 241,700 physical therapists and 85,000 physical therapist assistants by the year 2018.

The Balanced Budget Amendment of 1997 resulted in cutbacks in physical therapists' hours in skilled nursing facilities and home health care. The change in reimbursement regulations has slowed the demand for physical therapists, resulting in a moderation of the earlier predictions of long-term shortages.

Reimbursement issues and the proliferation of physical therapy programs are part of the formula used by the American Physical Therapy Association (APTA) to predict the surplus.

In 2009 there are 201 accredited physical therapy programs with an additional 8 under development and 247 accredited physical therapy assistant programs. This is a significant increase from 143 total programs in 1991 and only 48 in 1970 (APTA). While the number of physical therapists continues to grow, the conversion to the D.P.T. may result in fewer graduates per year.

Even with these changes, physical therapy still offers very good job opportunities nationwide, and employment is expected to increase faster than the average. According to the Bureau of Labor and Statistics *Occupational Outlook Handbook*, the elderly population, which has a high rate of illness and disabilities that require therapeutic intervention, continues to grow. The baby boomers are entering the stage of life where heart attacks and stroke often occur. Increasing numbers of children with medical problems who might not have survived without recent medical advances will now survive and may require physical therapy. In addition to clinical work, many therapists are increasingly taking on supervisory roles.

## State Supply and Demand

The Tennessee Department of Employment Security defines supply as the number of graduates from public institutions and demand as the average annual openings. Using these definitions, a comparison of data from 1993 to 1996 indicated an undersupply in physical therapists and physical therapy assistants, prompting programs in Tennessee to increase class size and initiate new programs. In 2008, there were 4,048 physical therapists and 1,923 physical therapy assistants employed in Tennessee.

Information from APTA indicates that the market for physical therapists in Tennessee has tightened; although there is still room for growth, the gap between supply and demand has been reduced. APTA issued a position paper stating that the organization “recommends against the development of new physical therapist and physical therapist assistant education programs and the expansion of existing programs until June 2002” (*PT Bulletin*, July 5, 1999). The recent move to the doctorate has resulted in fewer graduates during the transition. These program changes have served to balance the supply with a decreased demand.

In Tennessee, there are five accredited physical therapy programs: four are at state institutions and one is private. The University of Tennessee at Chattanooga, University of Tennessee Health Science Center in Memphis, Tennessee State University, and East Tennessee State University offer doctoral programs in physical therapy (D.P.T.). Students may gain acceptance into the program after completing the prerequisites. Belmont University is the only private institution in the state that offers a D.P.T. These programs last between 30 and 36 months. The maximum capacity for these programs in Tennessee is 146 students per year. The number of graduates for 2001–02 declined by 48 percent due to a reduction in the number of applicants and the conversion of the programs to the D.P.T. as shown in Table 2.3. Data is presented for the most recent year, 2008, as part of Tables 2.1 and 2.2., along with historical data from 1988-2008 in Table 2.3. Licensure data shows steady increases for both physical therapists and physical therapist assistants from 1996-2009 (Table 2.4).

There are seven physical therapist assistant programs in Tennessee. Programs are located at Chattanooga State Technical Community College, Jackson State Community College, Roane State



Community College, South College in Knoxville, Southwest Tennessee Community College, Volunteer State Community College, and Walters State Community College. All offer either an A.A.S. or A.S. degree and last between 18 and 24 months. The number of graduates from PTA programs declined due to decreased student and workplace demand.

**TABLE 2.1**

Completers of Physical Therapist Programs in Tennessee for the Year 2008

Title	Credential Attained	Completers
Physical Therapy/Therapist	Doctoral Degree	116
Physical Therapy/Therapist	Master's Degree	59
<b>TOTAL</b>		<b>175</b>

**TABLE 2.2**

Completers of Physical Therapist Assistant Programs in Tennessee for the Year 2008

Title	Credential Attained	Completers
Physical Therapist Assistant	Associate's Degree	122

Source: Tennessee Department of Labor and Workforce Development, "The Source," accessed August 2009. "Licensed" refers to the number holding active licenses on December 31 of the year.

**TABLE 2.3**

Tennessee Physical Therapist/Physical Therapist Assistant Graduates, 1988–2008

Period Year	Physical Therapists	Physical Therapist Assistants
1988	38	58
1989	46	49
1990	51	69
1991	84	80
1992	93	111
1996	133	138
1998	130	121
2000	187	150
2002	97	59
2008	175	122

Source: "The Source," Health Professions Education Directories, 1988–2002; 2008 data is from the Tennessee Department of Labor and Workforce Development, "The Source," accessed August 2009.

**TABLE 2.4**

## License History

Period Year	Physical Therapists	Physical Therapist Assistants
1996	2,871	1,338
1997	3,067	1,458
1998	3,188	1,605
2000	3,263	1,746
2001	3,304	1,772
2002	3,409	1,828
2003	3,501	2,287
2004	3,573	2,341
2005	3,586	2,375
2009	4,894	2,686

*Source: Tennessee Dept. of Labor and Workforce Development, "The Source," accessed December 16, 2009. "Licensed" refers to the number holding active licenses on Dec. 31 of the year for years 1996-2005. 2009 data from the Tennessee Department of Health, Health Professional Licensing Reports, accessed November 23, 2009. "Licensed" for the year 2009 refers to the number holding active licenses as of the date data was accessed.*

The outlook for physical therapists in Tennessee is competitive. Occupations in this field are not expected to be in great demand with employers. The growth rate is positive. There were more training completers in a recent year than job openings expected. No placement data is available for physical therapists. Total annual openings from 2008-2018 are projected to be 78.6 per year.

The outlook for physical therapist assistants in Tennessee is favorable. Occupations in physical therapy are expected to be in demand with employers. The growth rate is positive. There were more job openings expected annually than training completers in a recent year. Total annual average openings from 2008-2018 are projected to be 30.5.

**TABLE 2.5**

Placement Rate for Tennessee: Physical Therapist Assistant for 2008

	Completers Available	Completers Employed	Rate
All Schools	106	102	96.2

*Placement rates shown are for all Tennessee schools reporting placement rates for each program. LWIA records show the placement rate for each school. Placement rate is the percentage of graduates available for work (not in the military or pursuing further education) who are employed.*

### Summary

In 2009 there were 4,894 licensed physical therapists and 2,686 physical therapist assistant positions in Tennessee. In 2016 that number is projected to increase with a 20.5 percent growth rate and 120 average annual job openings for physical therapists. For physical therapist assistants, the projections for 2016 are 2,260 with a growth rate of 29.1 percent and 75 annual average job openings per year. The outlook for physical therapists in Tennessee is competitive. Physical therapists are not expected to be in great demand with employers, as the number of training completers is greater than job openings expected. The reverse is true for physical therapist assistants in Tennessee, which is rated as favorable. Physical therapist assistants are expected to be in demand with employers, as there are more training completers in a recent year than job openings expected annually. Local demands may change within a short period of time and may not always reflect state workforce data.



## Occupational Therapist and Occupational Therapist Assistant

Occupational therapists work with individuals who suffer from a mentally, physically, developmentally, or emotionally disabling condition. Occupational therapists use treatments to develop, recover, or maintain the daily living and work skills of their patients. Occupational therapist assistants work under the supervision of occupational therapists to carry out rehabilitation programs that help disabled persons learn or regain their ability to lead constructive lives.

### Status

- Aides are normally trained on the job at a given facility.
- Nationally, the BLS indicates employment of occupational therapist assistants and aides is projected to increase by 30.5 percent from 2008-2018 (3.0 percent annually), which is faster than the average of all occupations (1.0 percent). Projected employment for 2018 is expected to be 44,800 (34,600 assistants and 10,200 aides).
- Education data for 2008 shows the outlook for occupational therapists in Tennessee as a competitive market. There were more training completers in a recent year than job openings expected annually.
- Tennessee data for occupational therapy assisting indicates a favorable outlook.
- Population ratios indicate that OTAs are underrepresented in Tennessee and JAR data indicates a 9.7 percent vacancy rate for the OT/OTA category with some districts, such as West (40 percent) and Chattanooga (15.2 percent), having higher vacancy rates.
- Tennessee currently has five professional occupational therapist programs and four occupational therapist assistant programs.

### Description

The field of occupational therapy (OT) prepares providers who help patients improve their ability to perform tasks in living and working environments. Occupational therapists work with

individuals who suffer from a mentally, physically, developmentally, or emotionally disabling condition. Occupational therapists use treatments to develop, recover, or maintain the daily living and work skills of their patients. The therapist helps clients not only to improve their basic motor functions and reasoning abilities but also to compensate for permanent loss of function. The goal is to help clients have independent, productive, and satisfying lives. Occupational therapist assistants work under the supervision of occupational therapists to carry out rehabilitation programs that help disabled persons learn or regain their ability to lead constructive lives.

### **Educational Preparation**

Occupational therapists must be licensed, and the occupation requires a master's degree in occupational therapy, six months of supervised fieldwork, and passing scores on national and state examinations. The Accreditation Council for Occupational Therapy Education (ACOTE) currently accredits programs for the preparation of occupational therapists. Occupational therapists must pass a national certification examination before practicing. Preparation for occupational therapist assistants occurs primarily in programs offering the associate's degree or certificate from an accredited community college or technical school. This position is different than that of an occupational therapist aide, for which most of the training occurs on the job.

### **National Supply and Demand**

Occupational therapists work in a variety of settings. BLS data shows that there were approximately 131,300 jobs nationally for occupational therapists in 2008. More than a quarter of occupational therapists work part-time. About one out of ten occupational therapists held more than one job. Most jobs were in hospitals, including many in rehabilitation and psychiatric hospitals. Other major employers were offices of other health practitioners (including offices of occupational therapists), public and private educational services, and nursing care facilities. Some occupational therapists were employed by home health care services, outpatient care centers, offices of physicians, individual and family services, community care facilities for the elderly, and government agencies. A small number of occupational

therapists were self-employed in private practice. These practitioners treated clients referred by other health professionals. They also provided contract or consulting services to nursing care facilities, schools, adult day care programs, and home health care agencies.

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

Employment of occupational therapist assistants and aides is projected to increase by 30.5 percent from 2008 to 2018 (3.0 percent annually), faster than the average of all occupations (1.0 percent). Projected employment for 2018 is expected to be 46,800 (34,600 assistants and 10,200 aides). In 2008, occupational therapist assistants held 26,600 jobs, and aides held 7,800 jobs. About 29 percent worked in hospitals and about 21 percent worked in nursing and personal care facilities. About 23 percent worked primarily in offices of occupational therapists. The remainder worked in the offices and clinics of physicians, social service agencies, outpatient rehabilitation centers, and home health agencies.

The American Occupational Therapy Association (AOTA) passed a resolution that calls for the essential installation of a postbaccalaureate entry-level requirement for professional OT practice.

In 2007, there were 195 accredited occupational therapist programs and 126 occupational therapist assistant programs nationally. This is compared to 98 occupational therapist programs and 108 occupational therapist assistant programs in 1995.

The outlook for employment as an occupational therapist is good, according to the Bureau of Labor Statistics, due to medical advances which make it possible for patients with critical problems to survive. Employment is projected to increase faster than the average. Due

to industry growth and more intensive care, hospitals will continue to employ a large number of occupational therapists to staff their growing health care and outpatient rehabilitation programs.

### **State Supply and Demand**

In 2008, there were 1,643 occupational therapist positions in Tennessee. In 2000, the estimated employment was 1,380. The projected employment in 2018 is 1,830, with a growth rate of 20.4 percent (1.9 percent annual average)—faster than the 1.0 percent growth rate for all occupations—and 55 average annual openings. Licensure information for occupational therapists and occupational therapist assistants is available in Table 2.6 and demonstrates that we have exceeded the projected growth rate.

The same pattern is true for occupational therapist assistants and aides. In 2008, there were 382 positions for occupational therapist assistants and only 2 for aides. In 2018, the projected employment is 440 for assistants, which represents a growth rate of 21 percent (1.9 percent annual average), and 70 for aides, which represents a growth of 11.7 percent (1.1 percent annual average).

Tennessee currently has five professional occupational therapy programs. Belmont University offers entry-level, master's, and doctorate-level degrees, and Milligan College offers an M.O.T. (Master of Occupational Therapy). Tennessee State University, the University of Tennessee Health Science Center, and an off-campus site at the University of Tennessee at Chattanooga offer entry-level degrees.

Roane State Community College and Nashville State Community College offer occupational therapy assistant programs, graduating 38 occupational therapist assistants annually. Both offer either A.A.S. or A.S. degrees and last between 20 and 24 months.

Programs preparing occupational therapist assistants combined with in-migration are meeting workforce needs in Tennessee as projected by the OIS.

**TABLE 2.6**

License History

Period Year	Occupational Therapist	Occupational Therapist Assistant
1996	1,014	459
1997	1,180	543
1998	1,307	581
2000	1,287	595
2001	1,321	623
2002	1,401	626
2003	1,493	674
2004	1,572	720
2005	1,599	754
2009	2,253	1,051

Source: Tennessee Department of Labor and Workforce Development, “The Source,” accessed December 16, 2009. “Licensed” refers to the number holding active licenses as of the date data was accessed for the years 1996–2008. 2009 data from the Tennessee Department of Health, Health Professional Licensing Reports, accessed December 16, 2009. “Licensed” for the year 2009 refers to the number holding active licenses as of the date data was accessed.

**TABLE 2.7**

Completers of Occupational Therapist Programs in Tennessee for the Year 2008

Title	Credential Attained	Completers
Occupational Therapy/Therapist	Bachelor’s Degree	32
Occupational Therapy/Therapist	Doctoral Degree	16
Occupational Therapy/Therapist	Master’s Degree	69

**TABLE 2.8**

Completers of Occupational Therapist Assistant Programs in Tennessee for the Year 2008

Title	Credential Attained	Completers
Occupational Therapist Assistant	Associate’s Degree	33

Source: “The Source,” Tennessee Department of Labor and Workforce Development.

Education data for 2008 shows the outlook for occupational therapists in Tennessee is a competitive market, though the growth rate is positive. There were more training completers in a recent year than job openings expected annually (from 1.5 to 3 times as many training completers as job openings).

Education data for 2008 for occupational therapy assisting shows a favorable outlook. Occupational therapist assistants are expected to be in demand with employers. Based on a low number of job openings expected, or a poor supply-to-demand ratio, the outlook for occupational therapist assistants would be less than favorable. However, available placement rates show that the number of program training completers who obtained jobs has been high.

**TABLE 2.9**

Placement Rates for Tennessee: Occupational Therapist Assistant is 90 percent for the year 2008.

	Completers Available	Completers Employed	Rate (Percent)
All Schools	30	27	90.0

*Placement rates shown are for all Tennessee schools reporting placement rates for each program. LWIA records show the placement rate for each school. Placement rate is the percentage of graduates available for work (not in the military or pursuing further education) who are employed.*

*Source: The "Source," Tennessee Department of Labor and Workforce Development.*

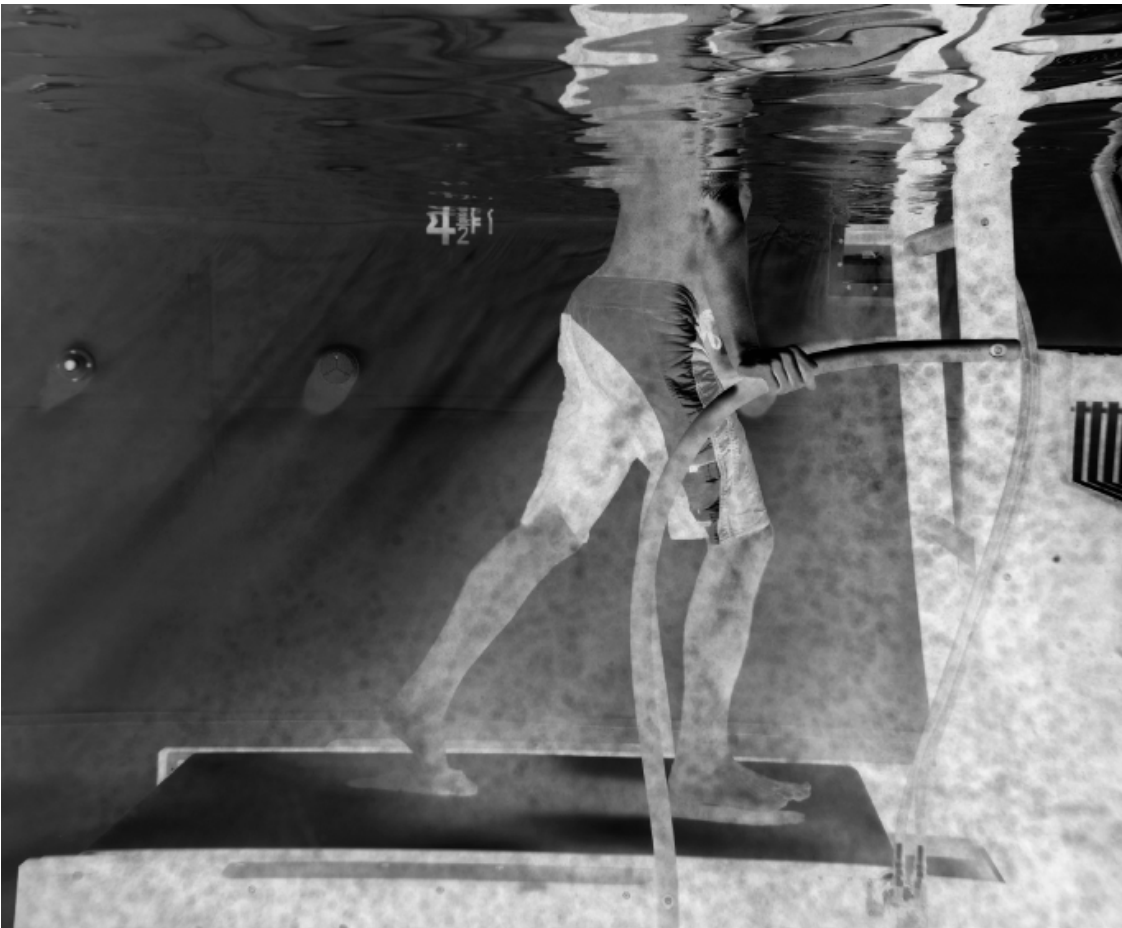
## Summary

The demand for occupational therapy providers has steadily increased over the years. Rehabilitative and long-term care needs are projected to grow due to the aging population, increased chronic debilitating conditions, federal legislation supporting expanded services to the disabled, and increased survival rates for trauma victims and low birth weight infants.

Future growth of this health care specialty will be determined by mental health insurance coverage, the availability of publicly sponsored programs, and the evolution of treatment modalities. However, unless occupational therapy can be established as facilitating early discharge of patients, the services could be subject to funding cuts if facility operating margins continue to be threatened. Changes in reimbursement for rehabilitation in long-term care facilities have



also reduced demand in this sector. The outlook for occupational therapists in Tennessee is a competitive market, while the outlook for occupational therapist assistants is favorable and expected to be in demand with employers. Both are projected to experience growth. Local demands may change within a short period of time and may not always reflect state workforce data.



## Athletic Trainer

The certified athletic trainer (ATC) is an educated and skilled professional specializing in the prevention, treatment, and rehabilitation of injuries.

### Status

- The BLS projects employment of athletic trainers is expected to grow 36.9 percent from 2008 to 2018 (3.7 percent annually)—faster than the average for all occupations (1.0 percent)—with projected employment in 2018 of 22,400. It is estimated that at the national and state levels, the demand will continue to grow.
- Most athletic training employment in Tennessee is at the university and college level and in sports medicine clinics. Demand is high for athletic trainers in the state's secondary schools.
- From 1996 to 2009, an increasing number of individuals each year have become licensed in the state of Tennessee as athletic trainers.
- There are eight accredited programs in Tennessee, seven offering bachelor's degrees and one offering an entry-level master's degree.
- With more licensed athletic trainers in Tennessee than employment positions identified and a slow growth rate for open positions predicted, the employment outlook for athletic trainers would be improved by combining this certification with other professional certifications.
- Population ratios for this field are slightly lower than that of the nation.

### Description

The certified athletic trainer (ATC) is an educated and skilled professional specializing in the prevention, treatment, and rehabilitation of injuries. In cooperation with physicians and other allied health personnel, the ATC functions as an integral member of the athletic health care team in secondary schools, colleges and universities, sports medicine clinics, professional sports programs,

industrial settings, and other health care environments. In 1990, the American Medical Association recognized athletic training as an allied health profession.

### **Educational Preparation**

A bachelor's degree in athletic training from a National Athletic Trainer's Association (NATA) Commission on Accreditation of Athletic Training Education (CAATE) accredited entry-level program is required to be eligible for Board of Certification (BOC) for athletic training examination candidacy. Presently, over 344 colleges and universities offer CAATE-approved curricula. The curriculum requires an intense and holistic didactic and clinical component. The clinical component requires practicums within a variety of clinical settings and sports and with physically active individuals of all ages.

Certified athletic trainers assist in the prevention, identification, management, and rehabilitation of injuries to athletes and the physically active population. They have formal training in anatomy, physiology, exercise science, psychology, emergency medicine, kinesiology, and athletic training.

### **National Supply and Demand**

NATA reports more than 32,269 members as of November 2009, with over 26,219 certified. The Board of Certification reported 2,380 athletic trainers were certified during the 2009 year. Athletic trainers held about 16,300 jobs in 2008. Employment of athletic trainers is expected to grow 36.9 percent from 2008 to 2018 (3.7 percent annually)—faster than the average for all occupations (1.0 percent)—with projected employment in 2018 of 22,400. Most athletic trainer jobs are related to sports, although an increasing number are found in nonsports settings. About 34 percent of athletic trainers worked in health care, including positions in hospitals, physician offices, and offices of other practitioners. About 34 percent were found in public and private educational services, primarily colleges, universities, and high schools. About 20 percent worked in recreational sports centers and fitness centers.

About 3.5 percent worked in professional sports. About 9.7 percent worked in the industrial/occupational setting and as

independent contractors. And more recently, new professional opportunities for athletic trainers have resulted in about 1 percent working in a military, government, or law enforcement arena.

## **State Supply and Demand**

To practice athletic training in the state of Tennessee a person must be a BOC-certified athletic trainer and must pass a Tennessee athletic training licensure examination. The Board of Certification reported 42 athletic trainers were certified during the 2009 year. Athletic training licensure is obtained through the Tennessee Board of Medical Examiners. In 2009, there were 1,019 licensed athletic trainers in Tennessee. Most athletic training employment in Tennessee is at the university and college level and in sports medicine clinics. Demand is high for athletic trainers in the state's secondary schools. It is estimated that at the national and state levels, the demand will continue to grow. Although opportunities with professional sports franchised teams are increasing, most future employment for ATCs will be in high schools.

The estimated employment in 2008 for athletic trainers in Tennessee was 314. The projected employment for 2016 is 360, representing a 22.4 percent growth rate (2.2 percent annual average) with 15 average annual openings. In 2009, there were 1,019 licensed athletic trainers in Tennessee. This is compared to 541 licensed athletic trainers in Tennessee in 2008 and 484 in 2007. The outlook for this field in Tennessee is competitive, though the growth rate is positive. There were more training completers in a recent year than job openings expected annually.

There are eight accredited programs in Tennessee, seven offering bachelor's degrees and one offering an entry-level master's degree. The undergraduate programs are at Lincoln Memorial University, Middle Tennessee State University, Union University, Carson-Newman College, Cumberland University, Lee University, and Tusculum College. The University of Tennessee at Chattanooga offers an entry-level master's program.

**TABLE 2.10**

## License History

Period Year	Athletic Training
1996	221
1997	267
1998	300
2000	356
2001	379
2002	444
2003	512
2004	546
2005	446
2006	452
2007	484
2008	541
2009	1,019

*Source: Tennessee Department of Labor and Workforce Development, "The Source," accessed December 16, 2009. "Licensed" refers to the number holding active licenses as of the date data was accessed for the years 1996–2008. 2009 data from the Tennessee Department of Health, Health Professional Licensing Reports, accessed December 16, 2009. "Licensed" for the year 2009 refers to the number holding active licenses as of the date data was accessed.*

**Summary**

National data indicates growth of 36.9 percent through 2018, while growth at the state level for 2016 is 22.4 percent (2.2 percent annually). There are more licensed athletic trainers in Tennessee than employment positions identified and a slow growth rate for open positions is predicted in Tennessee. The employment outlook for athletic trainers in the state would be improved by combining this certification with other professional certifications. Local demands may change within a short period of time and may not always reflect state workforce data. See Table 2.10 for additional license history.

## Recreational Therapist

Recreational therapists, also referred to as therapeutic recreation specialists, provide treatment services and recreation activities to individuals with disabilities, illnesses, or other disabling conditions.

### Status

- BLS employment data indicates a growth rate of employment of 14.6 percent for 2008–2018 (1.5 percent annually) for recreational therapists.
- Overall employment of recreational therapists is expected to grow more than the average for all occupations through the year 2018.
- Growth in assisted living and comprehensive long-term care facilities in Tennessee is expected as the aging population grows.
- State trends are likely to follow national trends, with nursing care facilities employing the largest number of recreational therapists, and with the number of such positions increasing slightly faster than positions in the occupation as a whole. Employment is expected to decline in hospitals as services shift to outpatient settings and employers emphasize cost containment.
- There are two programs offered in recreational therapy in Tennessee: Middle Tennessee State University and the University of Tennessee at Knoxville.
- Population ratio data for the state are slightly lower than that of the nation.

### Description

Recreational therapists, also referred to as therapeutic recreation specialists, provide treatment services and recreation activities to individuals with disabilities, illnesses, or other disabling conditions. Therapists treat and maintain the physical, mental, and emotional well-being of clients using a variety of techniques including arts and crafts, animals, sports, games, dance and movement, drama, music, and community outings. Therapists help individuals reduce depression, stress, and anxiety. They also help individuals recover



basic motor functioning and reasoning abilities, build confidence, and socialize effectively to enable greater independence and reduce or eliminate the effects of illness or disability. Recreational therapists should not be confused with recreation and fitness workers, who organize recreational activities primarily for enjoyment. In acute health settings, such as hospitals and rehabilitation centers, recreational therapists treat and rehabilitate individuals with specific health conditions, usually in conjunction or collaboration with physicians, nurses, psychologists, social workers, and physical and occupational therapists. In long-term and residential care facilities, recreational therapists use leisure activities—especially structured group programs—to improve and maintain their clients’ general health and well-being. They also may provide interventions to prevent the client from suffering further medical problems and complications.

### **Educational Preparation**

According to the BLS *Occupational Outlook Handbook*, a bachelor’s degree in therapeutic recreation, or in recreation with a concentration in therapeutic recreation, is the usual requirement for entry-level recreational therapist positions. Persons may qualify for paraprofessional positions with an associate’s degree in therapeutic recreation or a health care–related field. An associate’s degree in recreational therapy; training in art, drama, or music therapy; or qualifying work experience may be sufficient for activity director positions in nursing homes. There are approximately 130 programs that prepare recreational therapists. Most offer bachelor’s degrees, although some also offer associate’s, master’s, or doctoral degrees.

The National Council for Therapeutic Recreation Certification (NCTRC) certifies therapeutic recreation specialists. While certification is voluntary, most employers prefer to hire candidates who are certified therapeutic recreation specialists. To become certified, specialists must have a graduate or bachelor’s degree from an accredited institution, pass a written certification examination, and complete an internship of at least 480 hours. Prior to 2003, specialists were required to complete an internship of at least 360 hours in addition to the degree and examination requirements.

## National Supply and Demand

Recreational therapists held about 23,300 jobs in 2008. Almost 70 percent of salaried jobs for therapists were in nursing and residential care facilities and hospitals. Others worked in state and local government agencies and in elder-care facilities, including assisted-living facilities. The rest worked primarily in residential mental retardation, mental health, and substance abuse facilities; individual and family services; federal government agencies, educational services, and outpatient care centers. Overall employment of recreational therapists is expected to grow more than the average for all occupations through the year 2018. Projected employment for 2018 is 26,700, a 14.6 percent increase from 2008 to 2018 (1.5 percent annually), though growth is not considered as large compared to that of other occupations.

## State Supply and Demand

There are two programs offered in recreational therapy in Tennessee: Middle Tennessee State University and the University of Tennessee at Knoxville.

Middle Tennessee State University and the University of Tennessee at Knoxville report the following numbers of recreational therapy graduates:

**TABLE 2.11**

Graduate History

Period Year	Recreational Therapy
2005	19 (MTSU)
2006	16 (MTSU)
2007	31 (MTSU 11, and UT 20)
2008	29 (MTSU 15, and UT 14)
2009	23 (MTSU 10, and UT 13)

Currently, there are 43 students in the therapeutic recreation concentration for 2009–2010 at MTSU and 43 at UT.

In 2008 there were 467 recreational therapist positions in Tennessee according to “The Source,” with projected employment

of 410 positions in 2016, representing a 4.7 percent growth rate (.5 annual average) with an average of 10 openings annually.

### **Summary**

Growth in the number of assisted living and comprehensive long-term care facilities in Tennessee is expected as the aging population grows. State trends are likely to follow national trends, with nursing care facilities employing the largest number of recreational therapists, and with the number of such positions increasing slightly faster than positions in the occupation as a whole. Fast employment growth is expected in residential and outpatient settings that serve people who are physically disabled or cognitively disabled or the elderly or those who have mental illness or substance abuse problems. Employment is expected to decline in hospitals as services shift to outpatient settings and employers emphasize cost containment. Local demands may change within a short period of time and may not always reflect state workforce data.



## Speech-Language Pathologist, Speech-Language Pathology Assistant, and Audiologist

Speech-language pathologists (SLP) assess, treat, and facilitate prevention of speech, language, cognitive communication, voice, fluency, and other related disorders. A speech-language pathology assistant performs related tasks under the direction and supervision of a speech-language pathologist. Audiologists identify, assess, and manage auditory, balance, and other neural systems. They use testing devices to measure the ability of a person to hear sounds and to determine the nature and extent of hearing loss. Audiologists frequently work in tandem with speech-language pathologists to assess auditory processing capabilities.

### Status

- According to the BLS, the national employment rate of speech-language pathologists is expected to demonstrate growth with an increase of 18.5 percent through the year 2018 (1.8 percent annually). The employment rate of audiologists is expected to increase by 25 percent through the year 2018 (2.5 percent annually).
- State data indicate a 12.4 percent growth rate through 2016 (1.2 percent annually) for speech-language pathologists and a 17.5 percent growth rate through 2016 (1.8 percent annually) for audiologists.
- Factors that are affecting employment of speech-language pathologists and audiologists continue to be derived from the 1998 implementation and subsequent renewal of Medicare's prospective payment system for nursing homes.
- Employment of speech-language pathologists and audiologists in the health care arena is projected to continue to grow because of the graying of the baby boomers, who will increasingly become prone to medical conditions that result in hearing and speech problems.
- The outlook for this field in Tennessee is a competitive market with more training completers in a recent year than job openings expected annually.

- In Tennessee, there are five universities that offer speech-language pathology and/or audiology programs.
- Speech-language pathologists are underrepresented by population ratio in Tennessee, while the ratios are more favorable for audiologists.

## **Description**

Speech-language pathologists (SLP) assess, treat, and facilitate prevention of speech, language, cognitive communication, voice, fluency, and other related disorders. These health care professionals work with people who cannot adequately produce speech sounds, people with difficulty understanding and/or expressing language, and those with cognitive communication impairments. They may also work with people who have oral motor problems that result in eating and swallowing difficulties.

Audiologists identify, assess, and manage auditory, balance, and other neural systems. They use testing devices to measure the ability of a person to hear sounds and to determine the nature and extent of hearing loss. Audiologists frequently work in tandem with speech-language pathologists to assess auditory processing capabilities.

The American Speech-Language Hearing Association (ASHA) developed a voluntary registration program for speech-language pathology assistants (SLPA) effective January 2003 but abandoned the effort around 2005, when it became apparent that academic institutions had failed to create sufficient training programs to credential SLPAs. Several states took up the concept; for instance, in 2006, the Tennessee Health-Related Boards' Communication Disorders and Sciences Board created a training registry from which a limited supervision paradigm and limited scope of practice was applied. The SLPA is not trained for independent practice but rather has a limited scope of practice under supervision by a duly licensed SLP. The "early wave" of SLPAs was primarily practicing in health care; however, in 2008, the State Board of Education created and launched a two-tier licensure system for practice in the schools. This consists of an ASHA-credentialed SLP holding Professional School Services Personnel (PSSP) licensure, and a bachelor's level graduate

of a communication disorders program (with certain courses taken beyond the requirements for graduation) qualifying for licensure as a School Speech-Language Teacher (SSLT).

## **Educational Preparation**

A master's degree in speech-language pathology is the entry-level credential in this profession, and the doctor of audiology degree is required as entry level for audiologists. While there are numerous programs in communication sciences and disorders at the baccalaureate level, they are regarded as preprofessional preparation for graduate study and credentialing. At present, graduates of baccalaureate-level programs with additional coursework in clinical practice in the schools are licensed as SSLTs, permitted to practice in the public school system under supervision of a licensed and certified SLP. Likewise, an SLPA may be registered to practice in nursing homes and other settings under the supervision of a licensed and certified SLP. There are no audiology assistants; however, hearing instrument specialists (those not holding the doctorate), are licensed by the State of Tennessee as limited practitioners in the hearing aid industry.

Tennessee currently operates a registry for SLPAs practicing in the state. While there are no SLPA training programs in Tennessee, required coursework is available through undergraduate communication disorders programs (ETSU, UTK, MTSU, TSU, and Vanderbilt). The SLPA receives on-the-job training from the SLP licensee employed by the employer or service-delivery organization.

While not explicitly written into statute (Title 63, Chapter 17, Tennessee Code Annotated) speech-language pathology assistants by rule (Chapter 1370-1-.13) must possess the following minimum qualifications, beginning January 1, 2005: the applicant must have earned sixty (60) college-level semester credit hours in a program of study that includes twenty (20) semester hours of general education and at least twenty (20) semester hours in the specific knowledge and skills for an SLPA. This requirement shall be in technical content, which is detailed in Chapter 1370-1-.13. The training program shall include a minimum of one hundred (100) clock hours of field experiences supervised by a licensed speech-language pathologist.



**An SLPA shall be clearly identified as an assistant by a badge worn during all contact with clients.**

Under all circumstances, it is incumbent upon the supervising licensee to make all decisions regarding the diagnosis, management, and future disposition of the client

### **National Supply and Demand**

In 2005, the most recent demographic information from ASHA shows that there were 12,798 audiologists, 106,105 speech-language pathologists, and 1,305 holders of dual certification. Audiologists were more likely to work in independent health care offices or private practice settings; speech-language pathologists worked primarily in school settings (over 50 percent). About one-half of speech-language pathologists and/or audiologists provided services in preschools, elementary schools, secondary schools, or university clinics. Other work settings included, but were not limited to, hospitals, resident and nonresident health care facilities, speech-language-hearing centers, home health care agencies, or private practice.

The U.S. Bureau of Labor Statistics monitors the supply and demand for more than 800 occupations. According to the BLS, the national employment rate for speech-language pathologists is expected to grow with an increase of 18.5 percent through 2018, with an estimated 141,000 jobs in 2018. In occupational projection estimates for 2004 to 2014, speech-language pathology ranked 17th out of the 20 large-growth occupations that usually require a master's, doctoral, or first-professional degree. According to the BLS, an estimated 43,800 additional speech-language pathologists will be needed to fill the demand between 2008 and 2018—an 18.5 percent increase in job openings. Openings are due to growth and net replacements (ASHA, 2009).

Supply and demand for audiologists was reported by the BLS in November 2009: the national employment rate for audiologists is expected to grow with an increase of 25 percent through 2018. According to the BLS, an estimated 5,800 additional audiologists will be needed to fill the demand between 2006 and 2018—a 25 percent increase in job openings. Openings are due to growth and net replacements (ASHA, 2009). *U.S. News and World Report*

selected “audiologist” as one of its “30 Best Careers of 2009.” The article is available at [www.usnews.com/articles/business/best-careers/2008/12/11/bestcareers-2009-audiologist.html](http://www.usnews.com/articles/business/best-careers/2008/12/11/bestcareers-2009-audiologist.html).

Nationally, as of March 2009 there were approximately 244 institutions of higher education that offer Council on Academic Accreditation (CAA) accredited or candidate graduate programs in speech-language pathology and 71 CAA-accredited institutions that offer programs in audiology. Speech-language pathologists can acquire the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) offered by the American Speech-Language-Hearing Association (ASHA), and audiologists can earn the Certificate of Clinical Competence in Audiology (CCC-A). According to ASHA, as of 2012 audiologists will have to earn a doctoral degree in order to be certified. These data may be compared to 2002, when ASHA reported that there were 229 accredited speech-language pathology programs and 107 audiology programs.

Factors affecting employment of speech-language pathologists and audiologists continue to be derived from the 1998 implementation and subsequent renewal of Medicare’s prospective payment system for nursing homes. Many of the high-paying positions were eliminated, and school systems benefited from the cutbacks. That said, schools continue to be in dire straits in rural areas, with many SLP positions remaining unfilled. In Tennessee, the solution was a two-tiered licensure system, with SLPs supervising service delivery by bachelor’s-level personnel holding licensure as speech teachers.

Employment of speech-language pathologists and audiologists in the health care arena is projected to continue to grow because of the graying of the baby boomers, who will increasingly become prone to medical conditions that result in hearing and speech problems. As late as 2002, ASHA had hoped to fill the gap with credentialed SLPAs working under the direction of SLPs. As of May 2002, ASHA was aware of 30 operational associate degree programs for speech-language pathology assistants (SLPA). Fifty-five institutions were, at the time, considering development or were developing such programs. In 2005, ASHA abandoned its quest to credential SLPAs because demand for the associate’s degree failed to materialize. Today, a handful of states (including Tennessee) have taken up

registration of speech-language pathology assistants, and the training is a hybrid of academic preparation and on-the-job training.

### State Supply and Demand

In 2008, there were 1,873 SLPs in the state of Tennessee and 3,133 holding licenses, not counting personnel in the schools, who are not required to hold a license beyond teacher licensure. The projected employment in 2016 for licensed speech-language pathologists is approximately 1,960, representing a 12.4 percent growth rate (1.2 percent annual average) with 55 average annual openings. In 2009, there were 632 licensed audiologists in the state. The projected employment in 2016 for audiologists is 620, representing a 17.5 percent growth rate (1.7 percent annual average) with 15 average annual openings.

**TABLE 2.12**

Licensure Information for Speech-Language Pathologists and Audiologists in Tennessee

Period Year	Audiologists	Speech-Language Pathologists
1996	212	996
1997	216	1,132
1998	245	1,185
2000	245	1,113
2001	274	1,204
2002	296	1,372
2003	288	1,400
2004	287	1,490
2005	265	1,555
2009	632	3,133

Source: Tennessee Department of Labor and Workforce Development, “The Source,” accessed December 16, 2009. “Licensed” refers to the number holding active licenses as of the date data was accessed for the years 1996–2008. 2009 data from the Tennessee Department of Health, Health Professional Licensing Reports, accessed December 16, 2009. “Licensed” for the year 2009 refers to the number holding active licenses as of the date data was accessed.

**TABLE 2.13**

Completers for Speech-Language Pathology Programs in Tennessee for the Year 2008

Title	Credential Attained	Completers
Audiology/Audiologist and Speech-Language Pathology/Pathologist	Doctoral Degree	4
Audiology/Audiologist and Speech-Language Pathology/Pathologist	Master's Degree	59
Speech-Language Pathology/Pathologist	Master's Degree	20

Source: Tennessee Higher Education Commission; Tennessee Board of Regents; Tennessee Departments of Labor and Workforce Development and Education; IPEDS; NOICC.

In Tennessee, there are five universities that offer speech-language pathology and/or audiology programs. East Tennessee State University offers a master's degree in speech-language pathology and a doctoral degree in audiology. Tennessee State University offers a master's degree in speech-language pathology. The University of Memphis offers a master's degree in speech-language pathology and a doctoral degree in audiology. The University of Tennessee at Knoxville offers a master's degree in speech-language pathology and a doctoral degree in audiology, as does Vanderbilt University. The University of Memphis, the University of Tennessee, and Vanderbilt University also offer a Ph.D. in speech and hearing science (or hearing and speech science). Several universities offer B.S. degrees in communication disorders to prepare students for graduate school.

Roane State Community College originally developed a training program for the SLPA but abandoned the effort in 2005 due to "lack of interest" on the part of the prospective student population.

The outlook for this field in Tennessee is a competitive market. Occupations in speech-language pathology and audiology are not expected to be in great demand with employers, though the growth rate is positive. There were more training completers in a recent year than job openings expected annually.

## Summary

According to the BLS occupational outlook for 2008–2018, the employment of audiologists and speech-language pathologists is expected to grow faster than the average for all occupations through the year 2018. Tennessee nursing homes, home care agencies, and hospitals must compete with educational institutions and other private practice settings for speech-language-hearing professionals. While growth is positive both nationally and at the state level, the field remains a competitive market, with more training completers in a recent year than job openings expected for the state. Local demands may change within a short period of time and may not always reflect state workforce data. Local demands may change within a short period of time and may not always reflect state workforce data.



## Respiratory Therapist and Respiratory Therapist Technician

Respiratory therapists and respiratory therapist technicians evaluate, treat, and care for patients with breathing or other cardiopulmonary disorders under the direction of a physician. Respiratory therapist technicians follow specific, well-defined respiratory care procedures under the direction of respiratory therapists and physicians.

### Status

- The BLS expects employment of respiratory therapists to increase faster than the average of all occupations, increasing 20.9 percent from 2008 to 2018 (2.0 percent annually). The data for Tennessee mirrors the national data showing a similar increase.
- Tennessee has a high rate of tobacco-using citizens and a high prevalence rate of cardiovascular and lung disease. These factors may contribute to the increased demand for respiratory therapists and respiratory therapist technicians.
- There are eight respiratory therapist (advanced) programs in Tennessee offering A.A.S. degrees and three respiratory therapist (advanced) programs offering B.S. degrees. The program at East Tennessee State University also provides a track leading to an M.S. degree in allied health leadership. Several four-year institutions in the state have developed formal A.A.S.-to-B.S. tracks.
- Respiratory therapists and technicians are expected to be in demand with employers. The growth rate is positive.
- The JAR hospital vacancy rate data indicates a 3.8 percent vacancy for 2008 with a 13.4 percent vacancy in the West district, 8.3 percent in the South Middle district, and 5.4 percent in the Chattanooga district.
- The population ratio for respiratory therapists in Tennessee is greater than that of the nation.



## **Description**

Respiratory therapists and respiratory therapist technicians, also known as respiratory care practitioners, evaluate, treat, and care for patients with breathing or other cardiopulmonary disorders. Practicing under the direction of a physician, respiratory therapists assume primary responsibility for all respiratory care therapeutic treatments and diagnostic procedures, including the supervision of respiratory therapist technicians. Respiratory therapist technicians follow specific, well-defined respiratory care procedures under the direction of respiratory therapists and physicians.

In clinical practice, many of the day-to-day duties of therapists and technicians may overlap. Generally, therapists have greater responsibility than technicians. For example, respiratory therapists consult with physicians and other health care staff to help develop and modify patient care plans. Respiratory therapists also are more likely to provide complex therapy requiring considerable independent judgment and decision making, such as caring for patients on life support in intensive care units of hospitals.

Respiratory therapists evaluate and treat all types of patients, ranging from premature infants whose lungs are not fully developed to elderly people whose lungs are diseased. Respiratory therapists provide temporary relief to patients with chronic asthma or emphysema, and they give emergency care to patients who are victims of a heart attack, stroke, drowning, or shock.

## **Educational Preparation**

Training is offered at two- and four-year colleges and universities. In 2009, there were 30 entry-level training programs nationwide awarding associate's degree and 347 advanced-level programs awarding either associate's, bachelor's, or master's degrees. Entry-level programs prepare individuals to earn the CRT (certified respiratory therapist) credential. Advanced-level programs prepare individuals to earn the RRT (registered respiratory therapist) credential. All respiratory care educational programs are accredited by CAAHEP, the Committee on Accreditation of Allied Health Educational Programs.

In 2002, the CAAHEP educational process changed and required all programs to award graduates at least an associate's degree. All respiratory care educational programs in Tennessee are advanced-practice programs and grant an associate's degree or higher. There are no entry-level programs in Tennessee. An associate's degree is the minimum educational requirement, but a bachelor's or master's degree may be important for advancement. All states except Alaska and Hawaii require respiratory therapists to be licensed.

The registered respiratory therapist, RRT, is prepared to assume the primary responsibility for all respiratory care modalities and may be expected to exercise considerable independent clinical judgment in the respiratory care of patients. The certified respiratory therapist, CRT, may be expected to adjust or modify therapeutic techniques within well-defined procedures based on a limited range of patient responses.

In order to become a CRT, the graduate must take the entry-level examination from the National Board for Respiratory Care. To become an RRT, graduates must first obtain the CRT credential then take two advanced-practice exams, the written registry exam and the clinical simulation exam, both from the NBRC.

## **National Supply and Demand**

The Respiratory Therapist Human Resource Study (2005) by the American Association of Respiratory Care (AARC) reported that the job vacancy rates for respiratory therapists increased from 2000 to 2005. The job vacancy rate was 6,510 positions in 2000 (5.96 percent) and increased to 11,695 in 2005 (8.65 percent).

According to the BLS, respiratory therapists held about 105,900 jobs in 2008. Seventy-nine percent of jobs were in hospital departments of respiratory care, anesthesiology, or pulmonary medicine. Clinics, physician offices, nursing homes, and home care equipment companies accounted for most of the remaining jobs. The BLS expects employment of respiratory therapists to increase faster than the average of all occupations, increasing 20.9 percent from 2008 to 2018, with a projected employment in 2018 of 128,100, which is a faster rate of increase than the average for all occupations (1.0 percent).

In 2000, according to the American Association of Respiratory Care (AARC), the mean age for respiratory therapists was 40 years old. In 2005, this rose to 44.6 years. These numbers suggest the profession is aging and tracks closely with similar statistics of other professions. It is anticipated that the demand for respiratory therapists will continue to rise because of the aging population and breathing disorders associated with aging, increased rates of asthma, the continued development of neonatal and pediatric intensive care units, and the retirement of the current workforce over the next 10 years.

### **State Supply and Demand**

It is interesting to note that Tennessee has a high rate of tobacco-using citizens and a high prevalence rate of cardiovascular and lung disease. These factors may contribute to the increased demand for this profession.

The estimated employment in 2008 for respiratory therapists in Tennessee was 2,812. The projected employment for 2016 is 3,280, representing a growth rate of 24.6 percent (2.2 percent annual average), with an average of 105 openings annually. These numbers are consistent with the national trend. The outlook for respiratory therapists in Tennessee is favorable and occupations in the field are expected to be in demand with employers. The growth rate is positive. There were more job openings expected annually than training completers in a recent year.

There are eight respiratory therapist (advanced) programs in Tennessee offering A.A.S. degrees. These programs last between 21 and 24 months. There are three respiratory therapist (advanced) programs in Tennessee offering B.S. degrees. The program at East Tennessee State University also provides a track leading to an M.S. degree in allied health leadership. See Table 2.14.

Several four-year institutions in the state have developed formal A.A.S.-to-B.S. tracks. These tracks typically can be completed traditionally or online.

**TABLE 2.14**

A.A.S. and B.S. Programs in Tennessee

A.A.S. Programs in Tennessee	B.S. Programs in Tennessee
Chattanooga State Technical Community College	Baptist College of Health Sciences
Columbia State Community College	East Tennessee State University
Concorde Career College	Tennessee State University
Miller-Motte Technical College	
Roane State Community College	
Jackson State Community College	
Volunteer State Community College	
Walter State Community College	

**Summary**

Respiratory therapists are specialists focusing on the diagnosis and care of patients with breathing disorders. The demand for respiratory therapists is expected to increase at a pace faster than the average of all occupations—20.9 percent between 2008 and 2018 (2.0 percent annually) according to the BLS. The increasing demand will come from an aging population, which increases the incidence of cardiopulmonary disease. Also, advances in inhalable medications and in the treatment of lung transplant patients, heart attack and accident victims, and premature infants will increase the demand for the services of respiratory care practitioners. Hospitals employ the majority of therapists.

According to “The Source,” there were 156 associate’s degree completers in 2008 and 20 bachelor’s degree completers. This is an increase from the 81 total completers in 2000.

The outlook for this field in Tennessee is favorable, and occupations in respiratory therapy are expected to be in demand with employers. The growth rate is positive. There were more job openings expected annually than training completers in a recent year. Local demands may change within a short period of time and may not always reflect state workforce data.

## **Dietitian/Nutritionist and Dietetic Technician**

Dietitians/nutritionists are health professionals who deal with human nutrition. A registered dietitian/nutritionist meets requirements that are established by the American Dietetic Association. Dietitians/nutritionists help individuals and families of all ages, cultures, and economic means in choosing foods for adequate nutrition in health or illness throughout the life cycle. Dietitians/nutritionists also supervise the preparation and service of food to groups, develop modified diets, participate in nutrition research, and supervise the nutritional aspects of health care. Dietetic technicians work under the direction of dietitians/nutritionists.

### **Status**

- Nationally, the demand for registered dietitians/nutritionists is expected to increase almost as fast as the average for all occupations through 2018 as a result of increasing emphasis on disease prevention through improved dietary habits and due to increased public awareness of diabetes and obesity and general public interest in nutrition. Demand for dietetic technicians is expected to increase faster than the average for all occupations. State data mirrors that of the nation for both occupations.
- Medicare coverage may be expanded to include medical nutrition therapy for renal and diabetic patients, creating job growth for dietitians and nutritionists specializing in those diseases.
- Job prospects for dietitians/nutritionists in Tennessee will be limited because there are more training completers than there are open positions, although population ratios in this area as compared to the United States are less than the national average.
- Employment is expected to grow faster in contract providers of food services, social services agencies, and offices and clinics of physicians than in hospitals and nursing care facilities, which will be contracting out more services.

## **Description**

Dietitians/nutritionists may work in hospitals and other health care facilities or in private practice. They may work for government or community agencies, food industries, restaurants, schools, universities, or the military or in communications, sales, or a variety of other situations. Major areas of practice include clinical, community, management, and consultant dietetics.

Registered dietetic technicians work independently or in teams with registered dietitians in a variety of employment settings including health care, business and industry, public health, food service, and research.

## **Educational Preparation**

The Commission on Accreditation for Dietetics Education (CADE) currently accredits programs for the preparation of registered dietitians/nutritionists and dietetic technicians. Dietitians and nutritionists need at least a bachelor's degree in an accredited program in dietetics, foods and nutrition, food service systems management, or a related area. After completing the degree, individuals must complete a CADE-accredited supervised practice program at a health care facility, community agency, or food service corporation or must complete a supervised practice program in combination with undergraduate or graduate studies. Typically, a practice program lasts six to twelve months. The final requirements are to pass a national examination administered by the Commission on Dietetics Registration (CDR) and the completion of continuing professional education requirements to maintain registration.

To become a registered dietetic technician, individuals must obtain at least a two-year associate's degree and complete a dietetic technician program accredited by CADE including 450 hours of supervised practice experience in various community programs, health care, and food service facilities. The individual must then pass a national written examination administered by the CDR and complete continuing professional education requirements to maintain registration.



## National Supply and Demand

The Bureau of Labor Statistics reported that dietitians and nutritionists held about 60,300 jobs in 2008 with projections of 65,800 for 2018. More than half were in hospitals, nursing homes, or offices and clinics of physicians. State and local governments provided additional jobs—mostly in correctional facilities, health departments, and other public health-related areas.

Other jobs were found in restaurants, social service agencies, residential care facilities, diet workshops, physical fitness facilities, school systems, colleges and universities, and the federal government—mostly in the Department of Veterans Affairs. Some dietitians and nutritionists were employed by firms that provide food services on contract to such facilities as colleges and universities, airlines, correctional facilities, and company cafeterias. Some dietitians are self-employed, working as consultants to facilities such as hospitals and nursing homes or providing dietary counseling to individual clients.

As of 2008, there were 227 bachelor's and master's degree programs approved by CADE. Supervised practice experience can be acquired in two ways. The first requires completion of a CADE-accredited coordinated program. As of 2001, there were 55 accredited programs, which combined academics and supervised practice experience and generally lasted four to five years. The second option requires completion of 900 hours of supervised practice experience in any of the 252 CADE-accredited internships. Internships may be full-time programs lasting 6 to 12 months or part-time programs lasting two years. Students interested in research, advanced clinical positions, or public health may need an advanced degree.

According to the Bureau of Labor Statistics, employment of dietitians/nutritionists is expected to increase by 9.2 percent during the 2008–2018 period (9 percent annually), about as fast as the average for all occupations, because of increased emphasis on disease prevention, an expanding aging population, and public interest in nutrition. Employment projections for dietitians for 2018 are 65,800 and 28,700 for dietetic technicians.

Employment growth may be constrained if some employers substitute other workers—such as health educators, food service

managers, and dietetic technicians—to do work related to nutrition. Also, demand for nutritional therapy services is related to the ability of patients to pay, either out-of-pocket or through health insurance, and although more insurance plans now cover nutritional therapy services, the extent of such coverage varies among plans. Growth may be curbed by limitations on insurance reimbursement for dietetic services.

Hospitals will continue to employ a large number of dietitians and nutritionists to provide medical nutritional therapy and to plan meals. But hospitals also will continue to contract with outside agencies for food service and move medical nutritional therapy to outpatient care facilities, slowing job growth in hospitals as compared to food service, outpatient facilities, and other employers.

The number of dietitian/nutritionist positions in nursing care facilities is expected to decline because these establishments continue to contract with outside agencies for food services. However, employment is expected to grow rapidly in contract providers of food services in outpatient care centers and in offices of physicians and other health practitioners.

Finally, with increased public awareness of obesity and diabetes, Medicare coverage may be expanded to include medical nutrition therapy for renal and diabetic patients, creating job growth for dietitians and nutritionists specializing in those diseases.

## **State Supply and Demand**

Approximately 1,157 registered dietitians/nutritionists were employed in the state of Tennessee during 2008. The distribution of jobs follows the national average of approximately 33 percent employed in hospitals, 10 percent in long-term care facilities, 9 percent in community and public health, 10 percent in clinics and ambulatory care, and 11 percent in private practice as consultants. The number of registered dietetic technician positions in Tennessee during 2008 was 840. Total average job openings are 40 for dietitians/nutritionists representing 9.5 percent overall growth (.9 percent annual average) and dietetic technicians 40 openings representing 17.1 percent growth (1.6 percent annual average). This increase from the 2004 Allied Health study of less than 100 technicians may be due

to changing requirements in the certification process. Certification is no longer limited to those graduates with associate degrees but is also open to those with baccalaureate degrees.

There are ten private colleges and public universities in the state that offer didactic programs in dietetics, including the University of Tennessee at Chattanooga, Tennessee Technological University, Carson-Newman College, East Tennessee State University, the University of Tennessee at Knoxville, the University of Tennessee at Martin, the University of Memphis, Middle Tennessee State University, Lipscomb University, and Tennessee State University.

In Tennessee, there are seven postgraduate dietetic internships that provide the supervised practice component of dietetics training. These programs are at East Tennessee State University, the University of Tennessee at Knoxville, the University of Tennessee at Martin, the University of Memphis, National Health Corporation, Lipscomb University, and Vanderbilt University Medical Center. These programs accept 66 students per year, with Vanderbilt having the largest program.

There is only one dietetic technician training program in Tennessee, indicating an unmet need in providing opportunities for dietetic technician positions in the state. An associate's degree is offered at Shelby State Community College, with an enrollment of 21 students annually.

## **Summary**

The demand for registered dietitians/nutritionists and dietetic technicians is expected to increase faster than the average for all occupations through 2018 as a result of increasing emphasis on disease prevention through improved dietary habits and due to increased public awareness of diabetes and obesity and general public interest in nutrition. A growing and aging population will increase the demand for meals and nutritional counseling in nursing homes, schools, prisons, community health programs, and home health care agencies. In addition to employment growth, job openings also will result from the need to replace experienced workers who leave the occupation.

The number of dietitian/nutritionist positions in hospitals and nursing care facilities is expected to grow slowly as these organizations continue to contract out food service operation and move medical nutrition therapy to outpatient care facilities. On the other hand, employment is expected to grow quickly in contract providers of food services, social services agencies, and offices and clinics of physicians. Medicare coverage may be expanded to include medical nutrition therapy for renal and diabetic patients, creating job growth for dietitians and nutritionists specializing in those diseases.

The outlook for this field in Tennessee is a competitive market, although the growth rate is positive. There were more training completers in a recent year than job openings expected annually for the state, although population ratios in this area as compared to the United States are less than the national average for dietitians/nutritionists. The reverse is true for dietetic technicians. Local demands may change within a short period of time and may not always reflect state workforce data.



## Surgical Technologist

Surgical technologists work with surgical personnel delivering patient care and assuming appropriate responsibilities before, during, and after surgery.

### Status

- Growth for surgical technologists at both the state and national level is expected to be positive, with a national growth rate of 25.3 percent between 2008 and 2018 (2.5 percent annually). The state rate of growth mirrors that of the nation.
- Growth is expected as the number of surgeries increases due to an aging population. Technological advances will permit an increasing number of new surgical procedures to be performed and will also allow surgical technologists to assist with a greater number of procedures.
- Hospitals will continue to be the primary employer of surgical technologists, with increased growth expected in physicians' offices and in outpatient care centers.
- JAR hospital vacancy data indicates a vacancy rate of 2.4 percent in 2008, with a vacancy rate of 9.1 percent in the West district, while other local vacancy rates vary (Appendix D).
- Population ratios for the state are higher than that of the nation.

### Description

Surgical technologists, also called scrubs and surgical or operating room technicians, work with surgical personnel delivering patient care and assuming appropriate responsibilities before, during, and after surgery. They prepare the operating room by selecting and opening sterile supplies. Preoperative duties also include assembling, adjusting, and checking nonsterile equipment to ensure that it is in proper working order. Common duties include operating sterilizers, lights, suction machines, electrosurgical units, and diagnostic equipment. During surgery, technologists pass instruments and other sterile supplies to surgeons; help prepare, care for, and dispose of specimens taken for laboratory analysis; and help apply dressings. Postoperatively, surgical technologists may help transfer patients to the recovery room and clean and restock the operating

room. Certified surgical technologists with additional specialized education or training may also act in the role of the surgical first assistant or circulator. These duties include providing aid in exposure, hemostasis, and other technical functions under the surgeon's direction. The circulating technologist is the "unsterile" member of the surgical team who interviews the patient before surgery, prepares the patient, and helps with anesthesia.

## **Educational Preparation**

Certificate programs for surgical technology are offered in hospitals, the military, vocational schools, technical schools, community colleges, and universities. Programs vary from 9 to 24 months and lead to a certificate, diploma, or associate's degree. Programs provide classroom education and supervised clinical experiences. Certification also can be obtained from the National Center for Competency Testing (NCCT). To qualify to take the exam, candidates follow one of three paths: completing an accredited training program; undergoing a two-year hospital on-the-job training program; or acquiring seven years of experience working in the field. After passing the exam, individuals may use the designation "Tech in Surgery-Certified," TS-C (NCCT). This certification must be renewed every five years through either continuing education or reexamination. Most employers prefer to hire certified technologists. Surgical technologists advance by specializing in a particular area of surgery.

## **National Supply and Demand**

In 2006, there were 400 accredited surgical technologist programs. This is up from a previous figure of 363 programs. Hospitals will continue to be the primary employers, although much faster employment growth is expected in other health care industries. Surgical technologists held about 91,500 jobs in 2008 with almost 70 percent employed by hospitals, mainly in operating and delivery rooms. Others are employed in physicians' offices and by dentists who perform outpatient surgery and in outpatient surgery centers, including ambulatory surgical centers. A few technologists are employed directly by surgeons who have special surgical teams, such as those for liver transplants. Employment of surgical technologists is expected to grow 25.3 percent between 2008 and 2018, faster than the average, with projected jobs in 2018 of 114,700. This is



due to the increasing and aging population. Older people, including those of the baby boomer generation, who generally require more surgical procedures, will account for a larger portion of the general population. In addition, technological advances will permit an increasing number of new surgical procedures to be performed and will also allow surgical technologists to assist with a greater number of procedures. Hospitals will continue to be the primary employer of surgical technologists, with increased growth expected in physicians' offices and in outpatient care centers.

### **State Supply and Demand**

The number of employed surgical technologists in 2008 was 3,281 with projected employment in 2016 of 3,900, representing a 2.5 percent annual average growth rate. The number of surgical procedures is expected to rise as the population grows and ages. The growth plus replacement needs for surgical technologists are estimated to average about 175 openings per year from 2008 to 2018.

Accredited surgical technologist programs are located at Concorde Career College, Cumberland School of Technology, Dyersburg State Community College, High-Tech Institute of Nashville, Miller-Motte Business College, Nashville State Community College, Northeast State Technical Community College, and the Tennessee Technology Centers in Chattanooga, Crossville, Dickson, Hohenwald, Jackson, Knoxville, McMinnville, Memphis, Murfreesboro, and Paris. These programs either lead to a certificate or diploma.

### **Summary**

Hospitals will continue to be the primary employer of surgical technologists, with increased growth expected in physicians' offices and in outpatient care centers. According to the state economic outlook, this field in Tennessee is a competitive market. Growth in demand for surgical technologists is expected due in part to an aging population and an increased number of surgeries within this group. Technological advances allow for an increasing number of new procedures to be performed. Growth is expected at both the state and national level. The outlook for this field in Tennessee is a competitive market with more training completers than job openings expected annually in the state. Local demands may change within a short period of time and may not always reflect state workforce data.

# *Physician Assistant*

---

Physician assistants practice medicine in conjunction with a supervising physician. They are licensed to work in primary care settings as well as in medical and surgical specialties.

## **Status**

- With an impending national physician shortage, especially in primary care, there will be an increased demand for physician assistants.
- The BLS projects a 39 percent growth in employment for physician assistants through 2018 (3.9 percent annually).
- Tennessee is well below the national average in the number of practicing physician assistants per population. With several new programs in the state, that situation may change in the coming years.

## **Description**

Physician assistants (PAs) practice medicine under the supervision of a physician. They are educated to diagnose and treat medical conditions. They exercise supervised prescriptive authority, order and interpret various medical and laboratory tests, and conduct physical exams. They are trained to deliver a wide array of medical and surgical services. PAs work in both primary care and medical specialties. The work settings vary and include solo physician practices and multispecialty group practices, hospitals (including inpatient units, emergency rooms, outpatient units, and operating rooms), community health centers, and other settings. A little over one-third of PAs work in primary care fields (family/general medicine, general internal medicine, general pediatrics, or obstetrics/gynecology) and the remainder work in medical or surgical specialty fields. Approximately two-thirds of practicing PAs are women. Physician assistants are certified by the National Commission on Certification of Physician Assistants with the PA-C credential (Physician Assistant-Certified). All 50 states, the District of Columbia, and most U.S. territories regulate the practice of PAs through licensure.

## **Educational Preparation**

Most physician assistants are educated at the master's degree level. In the past decade, many baccalaureate-level programs have transitioned to the graduate level. Currently, there are about 145 programs in the U.S. accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA). Programs average about 25 to 27 months in length. Nationally, most PA programs enroll 35 to 45 students in each entering class. Generally, the competition for admission is keen with many programs having five or more applicants per entering space. In all programs, students complete clinical education rotations in the medical specialties of family medicine, internal medicine, geriatric medicine, pediatrics, obstetrics and gynecology, surgery, and emergency medicine.

## **National Supply and Demand**

According to the American Academy of Physician Assistants (AAPA), there are slightly more than 80,000 physician assistants eligible to practice in the U.S., and approximately 75,000 are actually employed and in practice. Employment projections by the BLS for 2018 are 103,900. The median age of PAs is approximately 39 and the mean age at time of graduation from a PA educational program is 30 years. The BLS in November 2009 estimated that there will be a need for an additional 42,800 PAs in the workforce by 2018 due to job growth and replacements for those retiring or leaving the workforce. It should be noted that the BLS estimates were made prior to the existing initiatives for health reform or the continuing concern about decreasing numbers of medical graduates entering primary care. Based on more recent developments, the need for PAs may exceed BLS projections.

## **State Supply and Demand**

The AAPA estimates the number of physician assistants in clinical practice in Tennessee as of December 31, 2008, to be 954. Per capita, there were 156 PAs per million in population, resulting in a national ranking of 43rd, well below the national average. Occupations in this cluster are expected to be in demand with employers with a positive growth rate. There are four PA programs

in Tennessee, and two of the four have provisional accreditation. The accredited PA programs are at Trevecca Nazarene University and South College, and the programs with provisional accreditation are at Bethel University and Lincoln Memorial University. According to the accrediting agency, ARC-PA, “Provisional accreditation is granted for a limited, defined period of time to a new program that has demonstrated its preparedness to initiate a program in accordance with the Standards.” Bethel University’s program was open from 2001 to 2006. It started again and was reaccredited in 2008. With several new programs initiated within the last few years, the supply of PAs from Tennessee institutions should increase significantly. In comparing data from AAPA regarding national and Tennessee characteristics, by most measures Tennessee PAs are very similar to their national counterparts except that there is a greater proportion of male PAs in Tennessee (50 percent in Tennessee versus 36 percent nationally); they are more likely to work in hospital emergency rooms as a primary site for work (15 percent versus 10 percent); they are more likely to work in a single specialty physician group practice (28 percent versus 23 percent), including family/general medicine (31 percent versus 26 percent); and they are more likely to work in a non-metropolitan area.

## **Summary**

Educational programs for PAs have increased over the last few decades both at the national level and in Tennessee. At the end of 2008, there were 142 PA programs in the U.S. The accredited PA programs in Tennessee are at Trevecca Nazarene University, a program which began in 1978 and graduates approximately 25 students per year, and South College which began in 2007. The newer programs with their dates of initial accreditation are Bethel University, 2008, and Lincoln Memorial University, 2009. The outlook for this field in Tennessee is favorable. Health care reimbursement and the receptivity of physicians to utilize physician assistants cause rather wide variation in the number of PAs in practice in any given state. Local demands may change within a short period and may not always reflect state workforce data.

# *Emergency Medical Services*

---

Emergency medical service providers give care to people in pre-hospital emergencies and transport them to hospitals or other health care institutions.

## **Status**

- The BLS projects that employment of emergency medical technicians (EMTs) will grow less than the average for all occupations through the year 2018, at a rate of 9 percent (.9 annually).
- Some of the state will grow at a rate of 2 percent annually as positions change from volunteer to paid positions. Additional openings may occur because of the limited potential for advancement and modest pay and benefits.
- An aging population will be more likely to have medical emergencies, resulting in an increased demand for EMTs and paramedics
- Emergency medical technicians and paramedics need formal training and certification or licensure, though requirements vary by state. Specific responsibilities of EMTs and paramedics depend on their level of qualification and training.
- Private ambulance companies compete for emergency service personnel with fire departments and hospitals.
- The National Registry of Emergency Medical Technicians (NREMT) certifies emergency medical service providers at five levels: First Responder, EMT-Basic, EMT-Intermediate/85, EMT-Intermediate/99, and Paramedic.
- Population ratios indicate a state ratio much greater than that of the nation.

## **Emergency Medical Technician (EMT)**

Emergency medical service providers give care to people in pre-hospital emergencies and transport them to hospitals or other health care institutions. In Tennessee, there are three classifications in EMS

licensure: EMT-IV, EMT-Paramedic, and Critical Care Paramedic. In Tennessee, EMTs may also initiate IV lines; there are no intermediate EMTs; and the critical care paramedic is a person who is licensed as a Tennessee paramedic.

## **Description**

The National Registry of Emergency Medical Technicians (NREMT) certifies emergency medical service providers at five levels: First Responder, EMT-Basic, EMT-Intermediate/85, EMT-Intermediate/99, and Paramedic. Some states have their own certification programs with distinct names and titles. In Tennessee, there are three classifications in EMS licensure: EMT-IV, EMT-Paramedic, and Critical Care Paramedic.

Specific responsibilities of EMTs and paramedics depend on their level of qualification and training. All EMTs may open airways, restore breathing, control bleeding, treat for shock, assist in childbirth, bandage wounds, treat and assist heart attack victims, give initial care to poison and burn victims, and use external defibrillators to care for patients experiencing cardiac arrest (BLS, 2003). In Tennessee, EMTs may also initiate IV lines.

Intermediate EMTs have more advanced training that allows them to administer intravenous fluids, use advanced airway techniques to assist patients experiencing respiratory emergencies, and use other intensive care procedures. Tennessee does not have intermediate EMTs.

EMT-paramedics provide the most extensive pre-hospital care. They may administer drugs orally and intravenously, perform and interpret electrocardiograms, perform intubations, use complex equipment, and perform and interpret 12-lead electrocardiograms (BLS, 2003).

In Tennessee, the critical care paramedic is a person who is licensed as a Tennessee paramedic and has successfully completed a critical care paramedic program recognized by the Division of Emergency Medical Services. A critical care paramedic may access existing and manage invasive lines such as, but not limited to, parenteral internal central catheters (PICC), Hickman catheters, Portacaths, central, and arterial lines; initiate and manage ventilators;



manage care of tracheostomy tubes; initiate and manage surgical airways and chest tubes; provide care for cardiac patients with cardiac interventions and advanced therapeutic devices (among other procedures and equipment); and perform and interpret 12-lead electrocardiograms.

## **Educational Preparation**

Nationally, training is offered at three progressive levels: EMT basic, intermediate, and paramedic. EMT training is offered in all 50 states and the District of Columbia by police, fire, and health departments; training may also be provided in hospitals and through nondegree courses in colleges and universities. Tennessee does not, however, offer training at the basic EMT level but rather at the EMT-IV level. Tennessee also does not offer training at the intermediate EMT level.

EMT basic is the minimum training needed to qualify for an EMT job. The basic training focuses on emergency skills such as managing respiratory, trauma, and cardiac emergencies and patient assessment. The program provides instruction and practice in dealing with bleeding, fractures, airway obstruction, cardiac arrest, and emergency childbirth. Graduates of approved EMT basic training programs must pass a written and practical examination administered by the state certifying agency or the National Registry of Emergency Medical Technicians.

Intermediate EMT training requirements vary from state to state. Most graduates of intermediate EMT training continue their education and receive the paramedic EMT certification. These programs last about two years and typically require 30–350 hours of training based on scope of practice. Students learn advanced skills such as the use of advanced airway devices, intravenous fluids, and some medications.

EMT-paramedic licensure requires training in anatomy and physiology as well as advanced medical skills. Typically, this training is conducted in community colleges and technical schools over one to two years and an associate's degree is awarded. These programs prepare the graduate to take the NREMT examination to become certified as a paramedic. Extensive related coursework and clinical and field experience is required.

All 50 states possess a certification procedure. In 42 states and the District of Columbia, registration with the National Registry is required at some or all levels of certification. Other states require their own certification examination or provide the option of taking the National Registry exam. To maintain certification, EMTs and paramedics must renew their certification or licensure, usually every two years (BLS, 2008–2009).

## **National Supply and Demand**

The BLS projects that employment of EMTs will grow less than the average for all occupations through the year 2018, at a rate of 9 percent, with projections of 62,000 jobs due to growth and replacement needs in 2018. Some growth will occur as positions change from volunteer to paid positions. It is becoming difficult for emergency medical services to recruit and retain unpaid volunteers because of the amount of training and the large time commitment these positions require. There will still be demand for part-time and volunteer EMTs in rural areas and smaller metropolitan areas. Additional openings may occur because of the limited potential for advancement as well as the modest pay and benefits. Additionally, an aging population will become more likely to have medical emergencies, resulting in an increased demand for EMTs and paramedics.

EMTs held about 210,700 jobs in 2008. About four in ten worked in local and suburban transportation or private ambulance services. About three in ten worked in fire, public ambulance, and emergency medical services (EMS). About two in ten worked in hospitals, and one in ten worked in various other industries providing emergency services. In addition, there are many volunteer EMTs.

In 2008 there were 239 paramedic EMT programs in the United States (Source: Annual JEMS Resource Guide, [www.jems.com/resources/directory/Accredited\\_EMT\\_and\\_Paramedic\\_Programs.html](http://www.jems.com/resources/directory/Accredited_EMT_and_Paramedic_Programs.html), accessed August 2009). The number of accredited programs has continually grown since 1985, as Table 2.16 illustrates.

**TABLE 2.15**

Industries with the Highest Levels of Employment in This Occupation

Industry	Employment
Other Ambulatory Health Care Services	96,050
Local Government (OES designation)	58,100
General Medical and Surgical Hospitals	40,090
Offices of Physicians	1,960
Outpatient Care Centers	1,850

**TABLE 2.16**

National Accredited Paramedic Emergency Medical Technicians Programs

Year	Number of Programs
1985	20
1990	72
1995	96
1998	109
2002	149
2008	239

Source: *Health Professions Education Directory, 2007–08.*

### State Supply and Demand

The estimated employment for EMTs and paramedics in Tennessee in 2008 was 6,837. The projected employment growth for 2016 is an average of 2 percent annually, with 195 average annual openings. Licensing data is available in Table 2.17.

Tennessee offers nine paramedic EMT programs. Five of the programs offer a certificate. These programs are located at Northeast State Technical Community College, Chattanooga State Technical Community College, Columbia State Community College, Tennessee Tech University, and Southwest Tennessee Community College. The four certificate and A.A.S. degree programs are through Volunteer State Community College, Jackson State Community College, Roane State Community College, and Walters State Community College. These programs last between 12 and 24 months.

**TABLE 2.17**  
License History

Period Year	EMT	EMT-IV	Paramedic
1996	9,351	—	—
1997	10,251	—	—
1998	10,214	—	—
1999	4,868	3,072	3,117
2000	4,634	2,949	2,948
2001	4,796	3,052	3,053
2002	4,963	3,158	3,159
2003	11,801	—	—
2004	12,354	—	—
2005	7,652	—	—
2009	29,598	—	—

*Source: Tennessee Department of Labor and Workforce Development, “The Source,” accessed December 16, 2009. “Licensed” refers to the number holding active licenses as of the date data was accessed for the years 1996–2008. 2009 data from the Tennessee Department of Health, Health Professional Licensing Reports, accessed December 16, 2009. “Licensed” for the year 2009 refers to the number holding active licenses as of the date data was accessed.*

In 2008 there were 382 paramedic EMT completers in Tennessee. The outlook for this field in Tennessee is a competitive market, though the growth rate is positive. There were more training completers in a recent year than job openings expected annually.

### Summary

While growth is below the average for all occupations, demand is expected to grow as paid positions replace volunteer positions and as workers leave due to limited potential for advancement and modest pay. The expanding population, particularly in older age groups that are the greatest users of emergency medical services, will also play a part in the growth in this field. Local demands may change within a short period of time and may not always reflect state workforce data.

# *Dental Services*

---

## **Dental Hygienist and Dental Assistant**

The registered dental hygienist is a licensed, professional, oral health educator and clinician, who, as a co-therapist with the dentist, provides preventive, educational, and clinical services in a variety of settings including private dental practices, public health clinics, public schools and hospitals, and at research facilities, in business, and in industry. Dental assistants perform their primary duties chair-side with the dentist, and they also perform a variety of related office and laboratory procedures under the direction or supervision of the dentist. Many dental assistants learn their skills on the job, but an increasing number are trained in dental assisting programs; most programs take less than one year to complete.

### **Status**

- Currently in Tennessee, both dental hygienists and dental assistants should expect excellent job prospects.
- Dental hygienists and dental assistants are increasingly responsible for patients' routine dental care so that dentists may focus on more complex procedures. This has increased the demand for hygienists and assistants.
- BLS data indicate a 62.9 percent increase for dental hygienists through 2018 (6.2 percent annually) and 35.8 percent for dental assistants (3.5 percent annually), which are both underrepresented in population ratio data for the state.
- State data indicate a growth rate through 2016 of 24.8 percent (2.4 percent annually for dental hygienists) and 24.5 percent (2.4 percent annually) for dental assistants.

### **Description**

The three basic dental auxiliary categories that make up the dental team are the dental hygienist, dental assistant, and dental laboratory technician. Data are reported on the dental hygienist and dental assistant as there are currently no accredited dental laboratory technician schools in Tennessee.

The registered dental hygienist is a licensed, professional, oral health educator and clinician, who, as a co-therapist with the dentist, provides preventive, educational, and clinical services in a variety of settings including private dental practices, public health clinics, public schools and hospitals, and at research facilities, in business, and in industry. Dental hygienists' duties may include patient-screening procedures, taking and developing dental radiographs, removing calculus and plaque from all surfaces of the teeth, applying preventive materials to teeth, making impressions of patients' teeth for study casts, and counseling patients on good dental health.

Depending upon the state in which the hygienist practices, supervision by a licensed dentist occurs at one of three levels: general supervision, meaning that the dentist does not have to be physically present; indirect supervision, meaning the dentist is in the facility; and direct supervision, when the dentist must evaluate each patient at the end of the dental hygiene procedure.

Dental assistants perform their primary duties chair-side with the dentist, and they also perform a variety of related office and laboratory procedures under the direction or supervision of the dentist. Duties of dental assistants include preparing and sterilizing equipment, assisting the dentist during a variety of treatment procedures, asking about the patient's medical history, and taking impressions of patients' teeth for study casts. In addition, dental assistants often perform office management tasks such as scheduling and billing.

## **Educational Preparation**

A minimum of two years of college education is necessary to become a dental hygienist. The majority of community college dental hygiene programs take two years to complete, with graduates receiving associate's degrees. University dental hygiene programs may offer baccalaureate and master's degrees, which generally require at least two years of additional schooling. Programs are accredited by the Commission on Dental Accreditation of the American Dental Association.

Almost all states require that dental hygienists be graduates of commission-accredited dental hygiene programs to be eligible for state licensure. Additionally, nearly all states require candidates for



licensure to obtain a passing score on the National Board Dental Hygienic Examination in addition to passing the state exam.

Dental assistants receive their formal training through academic programs at community colleges, vocational schools, technical institutes, universities, or dental schools. The Commission on Dental Accreditation also accredits these programs. Academic dental assisting programs range from earning an associate's degree of applied science in two years to earning a technical certificate in 9 to 11 months. In some areas of the country, dental assistants can begin their careers with on-the-job training and without a college degree; however, education is encouraged in order to ensure training in the latest procedures and techniques.

### **National Supply and Demand**

The BLS predicts that dental hygiene will be one of the 30 fastest-growing occupations in the coming years. Job opportunities are expected to remain excellent.

The number of dental hygienists employed in 2008 reached 174,100. Projecting a 36.1 percent increase over ten years with 62,900 more hygienists, that number is expected to rise to 237,000 by 2018 (3.6 percent annually).

Over one-half of dental hygienists work part-time. Almost all dental hygienists work in private dental offices. Others work for employment services, in physicians' offices, or in industries. Because multiple job holding is not unusual, the number of jobs exceeds the number of hygienists. A distinctive feature about this job is the flexible scheduling it allows.

BLS predicts that dental assistants should expect to be hired more often to perform routine dental tasks so that dentists may devote their time to more complex procedures. Job opportunities are expected to remain excellent.

The number of dental assistants employed in 2008 reached 295,300. That number is expected to increase, raising the number of dental assistants to 400,900 in 2018, an increase of 35.8 percent over ten years (3.5 percent annually). In fact, dental assistants are expected to be among the fastest-growing occupations over the 2008–2018 projection period.

Almost all positions for dental assistants are in dentists' offices. A small number of jobs are in federal, state, and local governments or in physicians' offices. About 35 percent of dental assistants work part-time, sometimes in more than one dental office.

**TABLE 2.18**

Accredited Dental Assistant and Dental Hygienist Programs in the United States

Year	Dental Assistant	Dental Hygienist
1985	290	198
1990	244	202
1995	229	212
2002	260	267
2009	280	304

Source: *Health Professions Education Data Book, 2003–2004*.

\*Source: *American Dental Association, January 2009*.

### State Supply and Demand

According to the Tennessee Department of Workforce Development, “The Source,” there were 3,252 dental hygienists and 5,386 dental assistants employed during 2008. “The Source” also reports that in 2008 there were 28 completers of all dental hygiene programs in Tennessee. All 28 completers were employed, making the employment rate 100 percent. This growth rate is positive and the outlook is favorable, showing that dental hygienists are expected to be in demand with employers. That same year, there were 88 completers of the dental assisting program. Seventy-seven were employed, making the employment rate 87.5 percent. This growth rate is still considered positive within a competitive market.

**TABLE 2.19**

Tennessee Supply and Demand Data

Opportunities	Dental Hygienist	Dental Assistant
Estimated Openings 2008	3,252	5,386
Estimated Openings 2010	3,568	5,897
Estimated Openings 2016	3,800	6,290
Annual Average Growth	2.2	2.2

Source: *Tennessee Department of Labor and Workforce Development, 2006*.

In 2008, the estimated employment of dental hygienists in Tennessee was 3,252. The projected number of dental hygienists in 2010 is 3,568. The overall growth rate is 24.8 percent (annual average of 2.5 percent), with 135 average annual openings. The estimated employment of dental assistants in 2008 in Tennessee was 5,386. The projected employment for 2010 is 5,897. The growth rate is 24.5 percent (2.5 percent annual average) with 120 average annual openings in Tennessee. Projections for 2016 are included in Table 2.19.

**TABLE 2.20**

Number of Licensed Dental Hygienists and Dental Assistants in Tennessee in 2000, 2001, 2002, and 2009

Year	Dental Assistant	Dental Hygienist
2000	3,720	2,920
2001	3,814	3,011
2002	4,018	3,090
2009	6,657	3,887

*Source: Tennessee Department of Labor and Workforce Development, "The Source," accessed December 16, 2009. "Licensed" refers to the number holding active licenses as of the date data was accessed for the years 1996–2008. 2009 data from the Tennessee Department of Health, Health Professional Licensing Reports, accessed December 16, 2009. "Licensed" for the year 2009 refers to the number holding active licenses as of the date data was accessed.*

Tennessee has seven programs in dental hygiene: Chattanooga State Community College, East Tennessee State University, Concorde Career College/Memphis, University of Tennessee College of Allied Health/Memphis, Remington College/Nashville, Tennessee State University, and Roane State Community College. All programs last between 17 and 24 months.

There are nine dental assistant programs in Tennessee: Chattanooga State Technical Community College, Tennessee Technology Center/Dickson, Northeast State Technical Community College, Volunteer State Community College, Tennessee Technology Center/Knoxville, Concorde Career Center/Memphis, Tennessee Technology Center/Memphis, Tennessee Technology Center/Murfreesboro and Kaplan Career Institute. All programs last between nine months and two years.

The Tennessee Department of Labor Assessment rated the growth rate for both dental hygienists and dental assistants as positive.

### **Summary**

The BLS predicts that dental hygiene will be one of the 30 fastest growing occupations in the coming years. The BLS also predicts that dental assistants will be hired more often to perform routine dental tasks so that dentists may devote their time to more complex procedures. According to the state economic outlook, dental hygienists are in demand with employers and the outlook for this occupation is favorable. The outlook for dental assistants is considered a competitive market, though growth is expected. Almost all jobs for dental hygienists and assistants are in dentists' offices. Employment services, physicians' offices, and federal, state, and local governments employ a smaller number of individuals in these occupations. Local demands may change within a short period of time and may not always reflect state workforce data.