WORKFORCE NEEDS AND ISSUES IN OCCUPATIONAL AND PHYSICAL THERAPY

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October 2007
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October 2007
WORKFORCE NEEDS AND ISSUES IN OCCUPATIONAL AND PHYSICAL THERAPY

October 2007

Midwest Center for Health Workforce Studies, University of Illinois at Chicago

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Executive Summary

Summary of the study: The purpose of this study was to identify critical workforce needs and issues in occupational and physical therapy. A national sample of 40 key informants/stakeholders was interviewed by telephone. Study participants were recruited from both fields as well as from outside the professions. The study participants were leaders in the professions of physical therapy and occupational therapy, occupational and physical therapy educators, higher education administrators, national level employers of physical therapy and occupational therapy practitioners, owners and supervisors of occupational and physical therapy clinical practices, representatives of payer groups and practicing therapists.

The interviews were approximately 40 minutes in length and utilized a semi-structured interview guide that covered perspectives on the shifts in supply of and demand for occupational and physical therapists and therapy assistants, the factors that influence supply and demand, impact of a supply shortage, future growth areas as well as possible constraints, and strategies to build an adequate supply of well trained practitioners. The interviews were completed within a one-year timeframe from May 2005 through April 2006.

Interviews were transcribed and analyzed for themes at the midpoint of the study and after all interviews were completed. At the midpoint of data collection, additional areas that needed further exploration were identified and additional interviewees were recruited that could address those areas.

Findings

1) Legislation, regulation of practice and reimbursement for services has had a very significant effect on demand; this is expected to continue. Examples identified included changes in state and federal funding of health care in all sectors as well as changes specific to occupational and physical therapy, changing requirements in state practice acts for physician referral in order to receive therapy, and efforts to limit payment by private insurers and workers’ compensation.

2) Study participants indicated that areas of growth included services for older adults, children and youth, and health promotion and wellness.

3) There is a reduced supply of new graduates, resulting from a significant drop in the applicant pool in the period that began in approximately 1999 and reached its low point in 2002. The applicant pool has been increasing steadily since 2002. Study participants cited the effects of the Balanced Budget Act of 1997 and the change in educational requirements for therapists as likely reasons for the drop. Attrition of practitioners, limited entry of foreign-trained therapists
and the proportion of part-time workers in both fields contribute to a supply shortfall, but little data is available to analyze the impact of these characteristics.

4) A shortage of occupational therapy and physical therapy practitioners exists. The shortage is not well quantified but affects all geographic regions and practice settings. As the interviews progressed over the year timeframe, study participants became increasingly strong in their statements about the growing shortage of both therapists and therapist assistants.

5) The shortage exists as a result of both increased demand and reduced supply.

6) Causes and impact of the workforce shortage are different for different practice settings with the most negative impact mentioned by study participants as affecting physical and occupational therapy services in acute care practice, skilled nursing facilities and home health care, with pediatrics practice in all settings also affected but to a lesser degree.

7) Study participants proposed many impacts of the shortage including poorer health and function for those who do not receive therapy, limited achievement of desired outcomes for those that do receive therapy but at a reduced intensity and negative impact on clinicians in terms of job satisfaction. A positive impact for clinicians has been increased salaries and benefits. Burnout and job related stress were negative impacts for clinicians.

8) Barriers to increasing supply to meet demand included the shortage of faculty for new or expanding educational programs, restrictions on the entrance of foreign trained therapists due to limited availability of visas as well as the differences in education required in the United States compared to other countries, and the lack of direct funding for educational program expansion and loan forgiveness or scholarship programs for therapy students.

9) The opinions and perceptions regarding the move to the Doctoral of Physical Therapy as the entry level of preparation in PT and the required move to the post-baccalaureate level in OT were mixed. There was evidence of significant mistrust of the motivation for the move to the DPT and a misunderstanding of how new graduates would fit into the workforce. Although there were misgivings, study participants clearly expected that this transition to the DPT as the entry-level degree would be completed.

10) There was uncertainty about the role of occupational therapy and physical therapist assistants in addressing increased demand for services. While the applicant pool for both is increasing, the number of programs dropped dramatically in the early 2000’s. The remaining programs are currently experiencing a larger applicant pool, although the total number of graduates will be depressed for several years and may not completely recover. Demand is high in some settings, but availability of practitioners is limited. It is not clear how reimbursement changes are going to impact demand for assistant level personnel.

11) Study participants were fairly uniform in stating that both physical therapy and occupational therapy would benefit from the public and other stakeholder groups having a clearer understanding of the educational preparation required for entry into the fields and of the respective scope of services for each profession. This was clearly more of a problem for occupational therapists than physical therapists. For physical therapists the difficulty was in understanding how the role of the physical therapist related to other professions including physicians, chiropractors and occupational therapists. For occupational therapy the difficulty
was at a more basic level due to limited understanding of what occupational therapy is and what occupational therapists do.

12) There are workforce issues that affect both professions including reimbursement constraints, student recruitment, and the faculty shortage.

13) Some issues were more predominant for one profession, such as the push for direct access by physical therapy, or the credentialing issue in mental health for occupational therapy.

14) There are issues that exist between the professions of OT and PT that appear to have workforce implications. These include role definition and overlap in various settings, competition for potential applicants to educational programs and the ability to collaborate in efforts to influence healthcare policy and practice regulations.

Areas for future study: The primary conclusion drawn by the investigators was the recognition that workforce research in physical and occupational therapy needs to move from a global view toward a more focused approach looked at specific practice settings, geographical regions and practitioner characteristics. If current demand as well as projected increasing demand is to be met there is a need to find sector specific strategies to increase the supply of therapy providers. This can only be accomplished if further research and action planning is done to address the many issues and concerns that were raised by this study.

Acknowledgements: We express our gratitude to those who agreed to be interviewed as they were critical to this study. Assistance with various aspects of this study was provided by Workforce Center team members Judith Cooksey, Surrey Walton, Gayle Byck, and Louise Martinez, and graduate students Chiu-Fang Chou, Kate Hermanowicz and Linda Tran. Marcia Finlayson provided valuable feedback. The Midwest Regional Workforce Center was funded through a cooperative agreement (# U79 HP 00002) with the Bureau of Health Professions of the Health Resources and Services Administration, which is part of the U.S. Department of Health and Human Services. Funding was also provided by the University of Illinois at Chicago Office of the Vice-Chancellor for Research and the Dean of the College of Applied Health Sciences. Data essential to the study were provided by the American Occupational Therapy Association and the American Physical Therapy Association.

A 48 page full report of this study is posted at http://www.ahs.uic.edu/ot/pdf/workforce.pdf

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Comprehensive Report

Background
After a prolonged period of increasing demand for services, the occupational therapy (OT) and physical therapy (PT) professions experienced a sudden downturn in 1997 following changes in Medicare reimbursement as part of the Balanced Budget Act (Fisher & Cooksey, 2002a). The impact on the job market was layoffs and lower wages (AOTA, 2000; APTA 2005 Employment Survey). The impact on the educational sectors was fewer applicants, fewer graduates and program closures (AOTA, 2007c; AOTA, 2007d; APTA 2007a). However, in recent years the demand for rehabilitative services has grown, in part due to the aging of the population and the expansion of service markets. Both professions are concerned about future workforce needs and implications for educational preparation. There are very few workforce researchers in physical and occupational therapy, and therefore few published studies in this area. In a 1995 article about supply and demand trends in physical therapy, Hack & Konrad challenge physical therapy leadership to undertake planning efforts despite the complexity of the issues and the inadequacy of data (Hack & Konrad, 1995). More than ten years later, little progress has been made.

Purpose of the study
The purpose of this study was to identify critical workforce needs and issues in occupational and physical therapy. Issues that were explored included identification of trends in the job market, factors perceived to be influencing demand for services and the supply of therapists, impact of a supply shortage, specific expertise needed to practice in future growth areas as well as possible constraints to growth, and strategies to build an adequate supply of well-trained practitioners. In addition, the study provided an opportunity to identify the differences in the workforce issues for physical therapy and occupational therapy as separate disciplines, as well as the shared concerns. Interviewees were asked to identify appropriate actions by each profession as well as opportunities for collaboration and synergistic action by the two professions in addressing workforce shortages. A primary objective of this study is to identify and prioritize areas that require further study. It is hoped that this qualitative assessment of workforce related needs will allow leaders from the professions, educators, policy makers and employers to plan appropriately and will guide future workforce research.

Methods
This study used a multi-method design that included both qualitative and quantitative methods. The study protocol was approved by the University of Illinois at Chicago (UIC) Institutional Review Board (IRB).

Quantitative Component
The quantitative portion consisted of collecting and reviewing data on supply, demand and utilization of occupational therapy and physical therapy services from a variety of data sources. Data reviewed included Medicare outpatient therapy utilization, Department of Education therapy utilization, Bureau of Labor Statistics (BLS) employment projections, and employment and education data from the American Occupational Therapy Association (AOTA) and the American Physical Therapy Association (APTA). Because of the differences in what data had been collected over time and the particular ways in which practice settings, jobs and practitioners were defined in

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each data source, it was difficult to compare utilization data across data sources and over time. Quantitative data on education, employment, and workforce demographics were analyzed for time trends and to compare the professions. These data were used to supplement the qualitative analysis, which became the primary focus of the study.

质性成分

The qualitative component of the project included 40 semi-structured interviews conducted by telephone. One or both of the co-investigators conducted each interview and the interviews were audiotaped. The interviews were completed within a one-year timeframe from May 2005 through April 2006.

参与者
The study participants were recruited from both fields as well as from outside the professions. The investigators reviewed publications, conference proceedings, and web sites and used personal knowledge of individuals from various practice areas, professional associations and educational settings to identify an initial group of participants to invite to participate. The initial group of 30 potential interviewees was identified across seven purposefully selected subgroups, which included 1) leaders in the professions of physical therapy and occupational therapy, 2) occupational and physical therapy educators and higher education administrators, 3) national and regional employers of physical therapy and occupational therapy practitioners, 4) owners of occupational and physical therapy clinical practices, 5) supervisors of occupational and physical therapy practitioners, 6) practicing therapists and 7) representatives of payer and regulatory groups.

The initial group of invitees was limited to thirty in order to allow recruitment of ten additional participants at a later point in the study to fill gaps across the targeted subgroups and settings. The initial 30 interviewees were contacted via email and invited to participate. Snowball sampling techniques were used to ask all those invited to participate (whether they consented to participate or not) to identify additional potential subjects that were knowledgeable about PT and OT supply and demand trends and issues. Those names were added to the potential interviewee list.

After 20 interviews were completed, gaps were identified across the subgroups, and additional participants were identified from those suggested by invited participants or from additional review by the investigators of the same sources that had been used to develop the initial group of invitees.

The final group of interviewees was selected to ensure that all seven subgroups were represented. Many of the final participants were representative of more than one subgroup but each was classified based on a primary group that the investigator determined based on the responses and background of the participants. Since the emphasis was on national workforce issues, 31 out of 40 interviewees had a national perspective, either through their job or their professional organization roles. Twenty of the 40 study participants were knowledgeable about both physical and occupational therapy. See Appendix B for a table summarizing the characteristics of the final group of participants.

访谈概要
The interview was designed to last approximately 30-45 minutes and included questions and a set of probes for each question to facilitate a complete understanding of each participant's answer to
the questions. The first section of the interview guide was developed to gather information about the interviewee’s background relevant to supply and demand for PT and OT services. The remainder of the interview guide was aimed at collecting information about the participant’s knowledge and opinions about PT and OT workforce from the late 1990’s to the present and about issues projected to be critical for the next 10 years. Two different guides were utilized, one for PT and OT clinicians and one for non-clinicians. The guide for clinicians included questions and probes about the individual’s clinical practice. As the interviews were completed, additional probes were added to some questions based on emerging themes and were used for the remaining interviews. See Appendix A for the interview guides.

Data Collection Procedures
Those that agreed to participate were scheduled for a phone interview and consent to participate was obtained via a faxed or mailed consent form. The audiotaped interviews were transcribed by research assistants who had not been present during the interviews. The transcript was reviewed and corrected if needed by the investigator who had served as the primary interviewer of that subject.

Data Analysis
The co-investigators read all of the transcripts of the completed interviews as they were completed and identified emerging themes. The co-investigators conferred on a frequent basis to discuss preliminary themes that were emerging and to ensure to the greatest degree possible that interviews were conducted in a similar manner by both. Consistency was further managed by having both investigators present during ten of the interviews.

The 40 completed interview transcripts were sorted into the seven subgroups for purposes of analysis. Thirteen preliminary themes were identified based on analysis that had occurred during the ongoing data collection. Each interview was read again by both investigators and was independently hand coded using the thirteen preliminary themes. The investigators shared their findings for each individual and each subgroup across the theme areas and identified shared and divergent interpretations of the interview data to refine a set of final themes and key findings.

Findings
Findings are organized in four sections: Factors affecting demand, factors affecting supply, interaction of supply and demand, and issues of concern. Findings are primarily focused on the interview results but incorporate relevant data from the literature, and from the AOTA and APTA.

Factors Affecting Demand

When considering demand, it is important to recognize that the terms “need” and “demand” represent two different concepts. In this analysis “need” is used when physical therapy or occupational services are indicated for a patient or client based on standards of practice, regulatory requirements or expert opinion. The term “demand” is used to represent the likelihood that an available and needed service will be utilized (Hack & Konrad, 1995). Payment for services and knowing that the services are indicated are primary drivers of demand. In the following discussion, an attempt will be made to differentiate when the discussion is relevant specifically to need versus demand.
Legislation, Regulation and Reimbursement

Demand for services continues to be directly affected by legislation and reimbursement policies and practices.

Balanced Budget Act of 1997
The Balanced Budget Act of 1997 (BBA) changed the way inpatient rehabilitation facilities, skilled nursing facilities (SNFs), and home health agencies were reimbursed for Medicare Part A from a retrospective to a prospective payment system (PPS) (Kahn & Kuttner, 1999). In addition, the BBA imposed a capped annual total payment for physical and occupational therapy services provided by therapists using individual Medicare provider numbers for Part B payment in 1999, and put therapy payments under the same fee schedule as physician payments (Olshin, Ciolek, & Hwang, 2002). The combination of the new payment systems and the therapy caps resulted in a significant downturn in the job market for physical therapy and occupational therapy personnel and layoffs in skilled nursing facilities (AOTA, 2000; Enchelmayer, Hamby & Martindale, 2001). One study participant with a national skilled nursing facility perspective indicated that terminating 30% or more of the therapy personnel was not uncommon across the industry. Some therapists and therapy assistants left practice altogether. Others switched to new practice settings, such as schools, which then experienced a decrease in vacancy rates (Fisher & Cooksey, 2002a). These layoffs quickly changed the overall occupational and physical therapy job market from a scenario of a shortage of practitioners to a ready supply of job seekers in most practice settings. While not the sole cause, the changed perception of the job market contributed to a rapid decrease in applicants to educational programs at both the therapist and therapy assistant levels. Most study participants, when asked about trends affecting the job market in the past five years, recapped the impact of the BBA on their practice setting. They described the decrease in jobs in the field in the late 1990’s, the number of therapists that moved from skilled nursing to other practice settings, and the indirect influence of the BBA on student recruitment and enrollment.

Between 1998 and 2001/2002, practices (and possibly profit expectations) were adjusted to fit the new reimbursement models, a moratorium was imposed on the implementation of the outpatient therapy caps in 2000, and modifications were made to reimbursement levels, allowing increased reimbursement for services under the various Medicare prospective payment systems (Olshin et al, 2002). Although the cap was in effect for a brief period in late 2003, the moratorium was maintained until December 2005. The re-initiation of the therapy cap in January 2006 was quickly followed in March 2006 by the implementation of a temporary process that provided a beneficiary with a possible exemption from the cap via an exception process (Metzler, 2006). The final outcome of the annual cap on payment for outpatient physical therapy and occupational therapy under Medicare B reimbursement rules remains to be seen, as the exception process is set to expire in December 2007. Despite the downturn in the late 1990’s, the effects of BBA on the physical therapy and occupational therapy job market have largely abated, and need and demand for services has rebounded. Study participants reported that vacancies exist in skilled nursing facilities, arguably the setting most negatively affected by the BBA.

Individuals with Disabilities Education Act
Another example of legislation that has a direct impact on demand for therapy services is the Individuals with Disabilities Education Act (IDEA). Provisions Part C (the funding for early intervention programs) and Part D (the funding for program evaluation and research) of IDEA must be reauthorized approximately every 5 years. Part B (the funding to provide services to school age
children) is permanently authorized but the provisions are revised with each reauthorization (Goodman, 2003). Changes in IDEA may affect therapy services at both the national and state level. Changes may alter the services that states must provide for 0-3 year olds, redefine eligibility criteria for special education, modify credential requirements for special education and therapy personnel, and broaden or narrow the role of related services providers, such as occupational and physical therapists and therapy assistants. These changes influence provider interest in providing services under IDEA as well as the financial feasibility of providing these services. One study participant noted that private therapy practices were negatively affected by the changes in early intervention regulations at the state level. The effect of changes in IDEA on therapy practices in early intervention or school system therapy services is largely unexplored.

Practice Acts
Interviewees recognized that at the state level there are practice act differences that affect the supply/demand balance. In physical therapy, the increasing ability for patients to be seen by a physical therapist without a physician referral has the potential to influence where physical therapists choose to practice. Licensing acts require different levels of supervision requirements for personnel who are licensed as therapy assistants, which results in higher utilization of assistants in some states. Some practice acts restrict the use of unlicensed personnel, typically aides, who are trained on the job. Other practice acts do not address the utilization of aides. This omission results in variation of the personnel providing therapy services as well as influencing whether services can be provided in a cost effective manner.

Outcome Data Reporting Requirements
A final example of how policy affects supply/demand balance is the emerging requirement by private and government payers for demonstrating quality and functional outcomes of therapy services in settings such as hospitals, skilled nursing facilities and home health care. The interviewee most knowledgeable about this requirement discussed how home health agencies that previously had not provided occupational therapy were now considering doing so because the federal government rating system was placing more emphasis on performance of self-care and functional tasks.

Potential Growth Areas for Therapy Services

Older Adults
It is well established that the proportion of older adults in the population is rising, and this increase has implications for therapy providers. It is projected that the percentage of the population age 65 or older will increase from 12.4% in 2000 to over 20% by 2060. This is due to the aging of the baby boomer cohort. Almost 45% of older adults are limited in activities because of chronic conditions (Wilmoth & Longino, 2006).

One frequently mentioned growth opportunity was the desire of older adults to be as independent as possible. Willingness on the part of the public to pay out of pocket for services that allow them to remain active and in their own homes was recognized as an opportunity to expand in the areas of home modification consultation, fitness programs, health and wellness classes, fall prevention, home health therapy services, caregiver training and support, and driver evaluation and training. Older workers who choose to keep working may need job site modifications to continue to meet job expectations. The growing population over age 65 will contribute to an increase in the number of adults who will need assisted living, or short-term or long-term care in a skilled nursing facility.
Facilities may use the availability of rehabilitation and wellness services as a marketing tool. The greater familiarity of administrators of skilled nursing facilities, inpatient rehabilitation facilities and home care agencies with payment regulations and the ability to work within the system were identified as creating incentives to hire therapists in these settings in the past few years. Continued growth in services for older adults is dependent in part on Medicare reimbursement for therapy services and willingness of recipients to pay out of pocket for services that Medicare doesn’t cover.

**Children and Youth**
At the other end of the lifespan, there were frequent statements regarding an increased demand for therapy services for children in schools, outpatient clinics and early intervention programs. Occupational therapy in particular was mentioned as being important to management of the cognitive and behavioral issues being faced in the school systems in accordance with laws requiring services for specific populations. According to the Centers for Disease Control and Prevention, the prevalence of autism spectrum disorders is increasing, and it is estimated that one out of 150 eight year old children has a diagnosed autism spectrum disorder (CDC, 2007). The increased prevalence of autism spectrum disorders was recognized by the interviewees who were most familiar with this area of practice as a driving force behind growth in this sector. They also noted that parents are increasingly knowledgeable about the potential benefit of therapy services for many different conditions and problems.

**Wellness**
A number of those interviewed discussed the market for prevention/wellness services. A prevalent belief was that there is an opportunity to develop and market these services to a wide age group of adults. Examples mentioned include Tai Chi classes for older adults at assisted living facilities, executive health sessions to develop positive healthy strategies for dealing with stress, training caregivers to provide assistance in the home, exercise prescription to prevent deconditioning and injury during recreational activities, and management of the physical impairments and functional limitations that can result from chronic illnesses such as diabetes, congestive heart failure and asthma. Although the potential in this area was uniformly recognized, there was concern that neither physical therapists nor occupational therapists are prepared to take full advantage of the opportunity. Several respondents perceived a lack of an “entrepreneurial spirit”, which was interpreted as the willingness to explore new areas of practice, take advantage of opportunities, tolerate some risk, and move beyond traditional practice. Adversity to financial risk was also mentioned as a potential barrier to capitalizing on the opportunities in the wellness arena.

**How the Perception of Others Influences Demand**

**Public Awareness**
Many of those interviewed acknowledged that there is a lack of awareness in the general public about the nature and value of therapy services, with the knowledge gap being more significant for OT than for PT. This lack of awareness was perceived as a barrier to future growth, particularly as physical therapy moves toward direct access for therapy recipients rather than physician referral. It was acknowledged by several OT study participants that physical therapy has been more proactive with regard to marketing, promoting name recognition, and moving toward more independent practice. Several interviewees agreed that if potential therapy users don’t know what therapy could do for them or where to find it, there would be a profound negative effect on growth. It was mentioned that this lack of knowledge would also be a bigger issue with the trend toward consumer directed health plans.
Academic Administrators
Study participants classified as academic administrators, such as deans and vice-chancellors, expressed mixed views of the therapy professions. In general, they are more positive about their physical therapy faculty and programs than their occupational therapy faculty and programs. Academic administrators voiced concern that occupational therapy faculty need to increase their scholarly activity and need to be more clear about what occupational therapy is and the role of the occupational therapist within the health care delivery system.

Relationship with Physicians
Although there was only one physician in the sample, it was clear from multiple interviewees that physicians are identified as having strong influence on the growth of both professions. Physician referral is an essential driver of physical therapy and occupational therapy services in many settings, regardless of whether patients have the right to direct access of physical therapy or occupational therapy services under state or federal law. Interviewees who support direct access to physical therapy services and expanding the self-employment of physical therapists voiced strong opposition to physician and corporate ownership of physical therapy services. The requirement that physical therapy services should be provided under the supervision of a physician was denounced by many of the interviewees although not all had formed opinions about whether the referral requirement is a problem. The requirement of a physician referral and the employment of physical therapists by physicians were perceived by physical therapist interviewees as being powerful barriers to the growth and health of the profession and as having potentially negative effects on patients and the costs of physical therapy services. These issues were not prominent for occupational therapy, although several occupational therapist study participants gave credit to physical therapy for taking up this issue.

Factors Affecting Supply

When considering supply, multiple components must be systematically evaluated. The components include 1) existing practitioners, 2) new graduates, 3) immigration of foreign trained professionals, 4) attrition, 5) work effort/part-time workers and 6) distribution of practitioners across employment settings. Study participants discussed all supply components to varying degrees. New graduate entry into the field was the most discussed supply factor and will be explored in greatest depth.

Existing Practitioners

It is impossible to get an exact count of practitioners, as some therapists and therapy assistants hold licenses in multiple states, a license may be maintained even if the licensee if not actively working as a therapy practitioner, and new graduates are constantly entering the workforce. However, estimates are useful to track over time and to compare the two professions.

It is estimated that over 104,000 licenses were held by occupational therapists in 2006 and over 32,000 for occupational therapy assistants (AOTA, 2006b). The Bureau of Labor Statistics (BLS) surveys employers about occupational therapist and occupational therapy assistant positions. The most recent report indicates that in 2004 there were 92,000 OT positions (BLS, 2007a) and 21,000 OTA positions (BLS, 2007b). It is recognized that the numbers will be different as one is a head
count of practitioners and BLS counts positions. If a practitioner works two jobs, that is counted as a two under the BLS system.

The Federation of State Boards of Physical Therapy reports there were 203,161 physical therapist licenses issued and 72,443 physical therapist assistant licenses in 2004 (Federation of State Boards of Physical Therapy, 2007). This can be compared with the 2004 BLS figures of 155,000 for PTs (BLS, 2007c) and 59,000 for PTAs (BLS, 2007d). It is unclear why the BLS count is so much less than the licensure count, but it is assumed that practitioners holding multiple licenses and those licensed but not currently working may account for some of the difference, as well as the different strategies used to obtain data.

There are about twice as many PTs/PTAs as OTs/OTAs. This may influence how practitioners perceive each other, as discussed later in this report.

**Supply of New Graduates**

Data on enrolled students and new graduates indicate a significant decrease between 1999 and 2004 in both professions (see Appendix C). In physical therapy, the number of physical therapist graduates peaked at 7411 in 1999 and declined to 4913 in 2004 – a decrease of nearly 38%. The number of graduates is gradually increasing with an estimate for 2007 of 6154 (APTA, 2007a). In 1999 there were 5455 Physical Therapist Assistant (PTA) graduates with a decline to 2198 in 2003 representing a 60% decrease (APTA, 2007b). The number of both Physical Therapists and Physical Therapist Assistant graduates has been recovering gradually since but has yet to match peak levels.

In occupational therapy, during the same time period of 1999 to 2004, enrollment data shows a similar pattern (see Appendix C). Enrollment data is used for the time trend analysis, as graduate data has only recently been collected by AOTA. The number of occupational therapy students peaked at 17,665 in 1999 and declined 43% to 10,008 in 2004 (see Appendix C). The decrease in OTA students was greater, with a 54% drop from 7,903 in 1999 to 3,622 in 2004. Enrollment in both programs has increased modestly over the past two years, but is still far below 1999 figures (AOTA, 2006c).

This drop in enrollment was due to a lack of qualified applicants. The applicant shortfall was believed by those interviewed to be primarily due to the Balanced Budget Act and its effect on the job market. The applicant decrease was also compounded by the transition to requiring a master’s degree for eligibility for certification in occupational therapy and to a master’s or doctoral degree for eligibility for licensure in physical therapy. These entry-level educational requirements became effective for physical therapy in 2002 and for occupational therapy in 2007. The period of transition had several effects. Due to the addition of up to a year of study and change in degree requirements, many programs did not admit students or graduate students for a year or in some cases for two years. Six occupational therapy programs closed in 2006 due to a decision not to move to the higher degree level (AOTA, 2007f) and this will diminish the number of graduates in 2008 and beyond. However, the applicant pool is recovering, contributing to an enrollment upswing since 2002 (see Appendix C) (AOTA, 2007c). Data indicate that pre-BBA levels of enrollment and graduates have not yet been reached and it is not clear whether those levels will be reached or surpassed in coming years.
In the physical and occupational therapist programs, although enrollment dropped considerably, there were few program closures. In the OTA and PTA sector of the education market, the changes were dramatic. Sixty-three of 193 OTA programs (32%) and 48 of 286 PTA programs (17%) closed or went on inactive status during the early 2000’s due to low enrollment (AOTA2007d, APTA 2007b). Interviewees with an academic administration background discussed the reactivity of community colleges to demand for programs. Also mentioned was the lack of institutional commitment to programs that require faculty who will only contribute to these professional programs and are difficult to hire. One of the more surprising findings was the lack of awareness or accurate understanding of the extent of program closures at the assistant level and of the impact on graduate production even among some national leaders.

Supply of Applicants

The number of applications to both levels of PT dropped dramatically in 1999 (see Appendix C), with OT anecdotally experiencing a similar drop (data not available). In addition to identifying the job market as a cause, study participants mentioned other factors that may influence applicants’ decision making, such as salaries, cost of tuition and living expenses, financial aid options, degree level and length of program options, and competition from other professions. Professions that were identified as possibly drawing applicants away from physical therapy include medicine, pharmacy and dentistry, because of higher initial and lifetime earning potential. Several of those interviewed remarked on the five year time lag between the improvement in the job market and the applicant pool. Although the upturn in the job market was recognized several years ago, applicant pools have only recently improved (Collins, 2007). Physical therapist programs are near full enrollment and the majority of slots for occupational therapy are now filled. Occupational therapy’s recovery from the depressed applicant pools of 1999-2002 has been slower than that of physical therapy, for undetermined causes. In 2005, although PT programs indicated that 97% of slots were filled (APTA, 2007a), OT programs reported only 59% of slots were filled (AOTA, 2007c). While PTA programs reported having 94% of their slots filled in 2005, OTA programs reported meeting 77% of their target class size (AOTA, 2007c, APTA 2007b). The large jump in applications for 2006-07 (40% increase in OT and 21% for OTA) (AOTA, 2007c) indicates a greater chance that more programs will be fully enrolled. However, some occupational therapy programs indicated they had vacancies in fall 2007. PT and PTA applications demonstrated a similar percentage increase for 2005-06 (APTA, 2007a, APTA 2007b), but the physical therapist application count is still approximately half of what it was ten years ago.

There were 9636 occupational therapist and occupational therapy assistant student slots that went unfilled 2004-2006, the only years for which national level data is available (AOTA, 2007c). From 1997 – 2006, there were a total of 16,310 unused slots for physical therapy and physical therapy assistant students (see Appendix C) (APTA, 2007a). Those individuals are lost to the workforce in a period of increased demand.

Some interviewees voiced concern that the smaller applicant pools at the time lessened the quality of admitted students, as students were being admitted that would not have been accepted in previous years when there was a surplus of applicants. Data to support this assertion is not available. Study participants also hypothesized that graduation rates were negatively affected during this period, but this could not be verified.
Other Supply Components

Other factors contributing to the supply shortfall, such as the percentage of part-time workers (estimated at 13% - 25% for both professions) (AOTA 2006a; APTA 2007a; APTA, 2007b) (see Appendix D), attrition and retirement of experienced practitioners from the workforce were also identified. Interviewees primarily attributed the size of the part-time workforce to the reality that both professions are predominantly female and that part-time work as well as attrition is often related to family and child rearing choices. However, a few study participants also proposed that part-time work was a lifestyle choice enabled by rising salaries as well as the choice to combine PT and OT practice with other types of work outside of the professions. There is limited current knowledge about why practitioners leave the field, although respondents did discuss physical demands of the job as being one contributing factor, especially in PT.

Less frequently mentioned was the drop in immigration of foreign trained professionals identified as being due to both the job market changes and the visa restrictions imposed following September 11th, 2001. Those interviewed had varying views of the decreasing supply of foreign trained clinicians. Some viewed this as appropriate given the changes in the required education in the US; others thought that increasing the immigration of foreign trained clinicians was a viable approach to addressing a shortage.

Diversity Issues

Another aspect of supply is the diversity of the occupational and physical therapy workforce. Several respondents mentioned concerns related to the primarily Caucasian workforce serving a population of people with disabilities, where minorities are overrepresented. The percentage of practitioners from racial and ethnic minority groups is very low. APTA data from 2006 indicates that 88.8% of survey respondents identify themselves as Caucasian (APTA 2007d), and the percentage is similar for occupational therapy personnel (86.2%) (AOTA, 2006a). However, the percentage of students who self-identify as being from ethnic and racial minorities is higher than that of practitioners (AOTA, 2006d), indicating a potential slow positive change over time as these students enter the workforce. Interview participants knowledgeable in this area felt that our limited ability to recruit underrepresented minorities to our fields would be even more of an impediment in the future, when more of the workforce is non-Caucasian.

Interaction of Supply and Demand Factors

Balance of Supply and Demand in Different Practice Settings

The practice sectors that have available positions do not always match with where therapists want to practice. There are many positions in SNFs and home care, but if graduates are more interested in working in an outpatient orthopedic or pediatric clinic, those jobs are likely to go unfilled. Also, interviewees frequently mentioned the lack of an entrepreneurial spirit as a limiting factor for both professions, although this was mentioned more frequently as a problem for occupational therapy than for physical therapy. This was seen as a barrier to responding to increasing demand for services in non-institutional settings.
Acute Care
Both OT and PT practice supervisors reported difficulty hiring practitioners to fill vacancies in acute care hospitals. Several respondents indicated that they felt therapists with entry-level doctoral degrees (DPT, OTD) were not particularly interested in the acute care setting and that OTs preferred settings that were less medically oriented. A few study participants shared that, due to the shortage of practitioners in their acute care setting, the role of OT was diminishing and might cease to exist in the future. When in a shortage situation, supervisors who oversee both inpatient rehab and acute care stated that inpatient rehab had to get priority due to the Medicare requirements and the intense therapy focus. Despite the perception that PTs and OTs trained at the masters and doctoral levels might not be interested in institutional settings, employers identified the need for advanced clinical reasoning, greater ability to work with fragile populations and the need to be able to recognize complications and new symptoms, and respond quickly as important workforce competencies. The need for a better understanding of how patient needs in the acute care setting would be met in the future was a clear concern. Respondents also raised the need for research in this setting to validate the value of therapy services in an acute care environment.

Inpatient Rehabilitation
Like other settings, there was variability in reports of the extent of the shortage in this setting, depending on geographic location, the number of new graduates, and the shift in populations being served in inpatient rehabilitation and skilled nursing facilities. Demand is consistently high as Medicare certified rehabilitation units must provide three hours of therapy per day for all patients. The recent transition to a Medicare prospective payment system for inpatient rehabilitation facilities has not clearly affected demand but the full implementation of tightening eligibility rules for acute inpatient rehabilitation has not yet occurred and is expected to have an impact on the census and viability of inpatient rehabilitation facilities.

Skilled Nursing Facilities
Shortages were reported across the country in SNFs for PTs, PTAs, OTs and OTAs. One of the primary drivers of reimbursement for a patient’s stay in a skilled nursing facility under Medicare Part A is the amount of therapy needed. Employers must be able to provide the required amount of therapy (and must therefore have adequate numbers of therapists on staff) to be able to provide services paid for under Medicare Part A regulations. In addition, with the increasing demand for less intense levels of rehabilitation compared to what is provided in the acute inpatient rehabilitation facility, more SNFs are offering rehabilitation programs targeted at those populations that have been identified as having acceptable outcomes with a lower intensity of rehabilitation care. Those interviewees most knowledgeable about the skilled nursing setting stated that the desirability of working in a SNF has been affected by the extensive layoffs following the BBA. In addition, these participants felt that fewer therapists are attracted to working in long-term care compared to other settings, and that the therapists viewed working in SNFs as less rewarding and challenging. SNFs are offering many recruitment incentives for therapists and therapist assistants, including higher pay, sign on bonuses and continuing education support.

Home Health Care
Shortages in this setting were reported in all regions, with rural areas experiencing significantly more difficulty hiring therapists than other areas. Medicare reimbursement is now more focused on functional outcomes and quality reporting. One respondent described how home care agencies that want to improve their functional outcome ratings are recognizing the potential for occupational and physical therapists and assistants to assist in this effort.
Assisted Living Facilities
These residential facilities provide an alternative to a skilled nursing facility for the older adult who needs some assistance but not full time nursing care (Wright, 2004). According to the participant most knowledgeable about this setting, assisted living facilities had success in recruiting some of the therapists laid off by SNFs after the BBA, but they were experiencing difficulty filling their vacancies now that there are more job opportunities available in other settings. They are moving more into the areas of prevention and wellness programming, due to resident request and marketing advantage and therapists are needed to develop and implement these programs.

Outpatient Orthopedic Clinics
There has been a rapid expansion of outpatient orthopedic clinics, primarily providing physical therapy with limited provision of occupational therapy. According to the study participants, there is a high demand for clinicians in this setting, in response to the increasing number of patients with musculoskeletal disorders and injuries. Common reasons for needing physical and occupational therapy in the outpatient setting are sports related injuries, surgical joint repairs and replacements, and rehabilitation from injuries such as sprains, strains, and fractures. Independently practicing therapists as well as hospital/health care systems, for profit corporations and physicians own these clinics. Physician and corporate ownership of physical therapy practice is a contentious issue within the profession of physical therapy and between the physical therapy profession and some specialties within the medical profession. Viability of private practice for physical therapists was mentioned as a critical concern when discussing the ability to recruit applicants to the field and to retain current practitioners. Occupational therapists generally did not identify physician ownership of occupational therapy clinics as a significant workforce factor, in part due to the limited number of therapists who work under this arrangement.

School Systems and Early Intervention
Occupational and physical therapy services in schools are mandated by the Individuals with Disabilities Education Act (IDEA) for children who need “those services necessary for the student to benefit from his or her special education program” (Muhlenhaupt, 2000, p. 10). Services are also mandated under IDEA for eligible children in early intervention programs (defined as services for children age 0-3 years). Both PT and OT interviewees were convinced that there are significant shortages of therapists in school-based practice. Study participants were consistent in reporting that more OTs than PTs work in the school setting. One study participant whose business contracts with schools to provide services to their students indicated that there has been steady growth in demand in the schools, in part due to the increase in the number of children being identified as eligible for special education services, particularly due to autism spectrum disorders, as mentioned earlier in this report. Those interviewed shared a perception that occupational therapists receive more preparation in entry-level training for school practice than physical therapists receive. Those knowledgeable about the role of physical therapists in the school setting stated uniformly that the APTA has not focused adequate attention on this setting although there was also mention that APTA has begun providing limited training for PTs who work in schools or want to transition to that practice setting.

Pediatric Outpatient Clinics
According to the interviewees with knowledge about pediatric occupational and physical therapy, the number of outpatient pediatric occupational and physical therapy clinics varies significantly on a geographic basis. Pediatric clinics tend to cluster in urban/suburban areas. They may be owned by
a hospital, owned by a private practitioner(s) or owned by a corporation, usually as part of a corporate chain. A shortage of therapists in this setting was a uniform concern among national level employers, practice owners, and reimbursement representatives. Waiting lists were reported to be common, and when staff vacancies were filled, parents were still on the waiting list as they had not found another therapy provider. Pediatric practices were described as being less profitable than adult outpatient orthopedic practices for owners. Therapists in pediatric settings produce significantly lower gross patient billing than in other settings for reasons that are not entirely clear, but which seem to be related to the one-on-one nature of pediatric practice. Physician ownership of these clinics is rare, and corporate ownership is also much less prevalent than with adult clinics. Pediatric clinics tend to be owned by individual therapists in private practice.

**Mental Health**

The number of occupational therapy practitioners working in mental health is decreasing, but they are still present in both hospital and community based settings (AOTA, 2006a). It is one of six areas of practice that AOTA will be highlighting as part of the Centennial Vision as a future area for growth (AOTA, 2007e). According to the most knowledgeable respondent, many of the services previously provided by occupational therapists have been reassigned to recreational therapists and mental health workers. One of the factors decreasing demand in this setting is the pay scale, which is often less than other settings, especially in community mental health centers. One interviewee described how some states have regulations that prevent occupational therapists from being considered “Qualified Mental Health Professionals” and which therefore may limit their role. AOTA is acting to change this constraint (Pitts, 2006).

**Geographical Aspects of the Shortage**

Respondents uniformly described the shortage as being more severe in rural areas compared to urban and suburban areas, regardless of practice setting. The attractiveness of the lifestyle associated with metropolitan areas was proposed as one reason for the rural/urban disparity. Proximity to educational programs was proposed by some respondents as being a reason for having less difficulty in recruiting physical and occupational therapy clinicians. An important often mentioned geographical influence is differences in state level legislation that can affect the supply/demand balance acutely or in the long term. For example, according to one interviewee, California recently implemented workers’ compensation reforms that limit the reimbursement for services by the insurance carrier for an injured worker. According to owners of clinics that serve patients with Worker’s Compensation as a payment source, the shrinking reimbursement has resulted in involuntary reduction of staff numbers in outpatient clinics and the work rehabilitation sector. Therapists who are forced to leave positions in these settings may then move into vacant positions in other practice areas despite low, or potentially inadequate, levels of preparation or expertise. Fewer open positions may be available in states that are affected by this type of reimbursement change.

**Issues of Concern**

**What is the impact of the shortage?**

Practice owners and supervisors described a number of responses to the shortage situation including failing to provide care that meets the standard of “best practice”, increasing demand on
Clinicians to work longer hours, practitioner stress and burnout, shortened individual treatment sessions, more therapy provided in groups, and a delay in initiating care. A few study participants indicated a concern that ethical problems are more prone to arise during severe workforce shortages. Another impact is a change in who provides therapy services, for example, temporary agency staff are used more frequently, personnel with less training are used for simpler tasks, and other professions take over the therapists’ responsibilities when there is a long standing vacancy. This may include athletic trainers taking over for PTs, social workers or recreational therapists taking over for mental health occupational therapists, developmental therapists taking over for OTs or PTs, and nursing taking over for either profession. It may also be the case that if a geographic area has more available OTs than PTs, or vice versa, one of the professions may provide some services that are typically provided by the other. While those interviewed agreed that there is an assumption that these scenarios would negatively influence outcomes for patients/clients, there is a lack of data available to confirm or deny a negative impact on therapy outcomes. A positive impact for clinicians has been increased salaries and benefits.

**Should academic programs be expanded due to the shortage of workers?**

**Opening or Expanding Programs**

Recently, there is an upswing of interest in starting new programs at both the therapist and assistant level in both professions. In October 2007, fifteen occupational therapy assistant and three occupational therapist programs were in the developing or applicant phase (AOTA, 2007a). Several of these programs are satellite locations of existing programs. One physical therapist and fourteen physical therapist assistant programs were in the accreditation pipeline (APTA, 2007c). If applicant pools are robust enough to support full enrollment, these new programs will contribute to an increased number of graduates within the next few years.

Several study participants knowledgeable about academic programs suggested that the preferred approach to increasing the number of graduates would be to increase the class size at existing programs, rather than increase in the number of schools offering OT or PT programs. Expansion depends on an adequate pool of qualified applicants, which does not uniformly exist, particularly for OT and OTA programs. While little objective evidence was offered regarding the quality of existing programs, the consensus was that it would be more efficient to expand the high quality programs than to open new programs that would have difficulty recruiting qualified department heads and faculty. While participants recognized that it is not possible to control the total number of programs, closing programs that were perceived to be of lower quality was mentioned as a preferred way to create opportunity for new programs to open without spreading limited faculty and clinical training resources too thin.

**Faculty Shortage**

Study participants offered the general impression that a faculty shortage exists although the level of concern and specific concerns varied. The high volume of advertisement for faculty positions and the length of time it takes to fill an open position (which may simply remain unfilled) were cited as indicators of a shortage. However, most of the interviewees working in the academic arena reported that faculty in their own institutions was stable so recruitment was not a primary personal concern. There was acknowledgement that if a position became vacant, filling the position with a person with the specifically needed content expertise would be difficult. Some respondents spoke favorably about the hiring of clinical experts in faculty roles for content areas not covered by full
time faculty. While some study participants voiced concerns about the lack of a contemporary knowledge base of faculty, this was not clearly based on recent interactions with faculty or students nor was it specifically related to student/graduate deficits.

Faculty vacancies in assistant level programs were recognized as a continuing problem, but respondents did not discuss this issue in relationship to the number of programs that went on inactive status or closed. These program closures should have resulted in more available faculty but it is not clear if that was the case.

Program Director Vacancies
Concerns about filling future program director positions for physical and occupational therapist programs was acknowledged as being a significantly higher level concern than filling current faculty positions.

Fieldwork Sites
Another barrier to the expansion of educational programs is the availability of clinical training opportunities that prepare students adequately for contemporary practice as well as for their long-term career growth and development. Very little has been written about the availability and quality of clinical training opportunities in either physical therapy or occupational therapy. Knowledgeable respondents indicated that a shortage of suitable training sites or of qualified clinical instructors would be a limitation in the expansion of educational programs. Few references were made related to the clinical training of occupational therapists.

Are students/graduates well prepared for current practice?

Practice supervisors and national employers expressed some concerns about either the commitment or the depth and breadth of the knowledge of students/graduates. Employers discussed the need to provide additional specialized training for new employees. The use of residency and fellowship programs, primarily in physical therapy, to provide additional focused training, was discussed as a strategy to increase skill level of new graduates and experienced clinicians.

Those that expressed concerns about inadequate training of new graduates identified the need for high level skills in clinical reasoning, screening for medical conditions, team interactions and communication as well as specific practice areas such as management of chronic spinal dysfunction or complex shoulder and hand injuries as areas of possible deficits in training. Other study participants felt that the doctoral level of preparation was likely to decrease interest in some specific settings such as acute care. None of the physical therapists interviewed were negative about the move to the entry-level doctorate degree. Among the non-physical therapists, study participants clearly expected that this transition to the DPT as the entry-level degree would be complete, but there was a mix of opinions about the necessity and value of this degree change. Employers also expressed concern that hiring physical therapists with doctoral level degrees would become increasingly expensive. Although not often mentioned, there was also a mix of opinions of the value of the Doctor of Occupational Therapy degree, and no indication that those interviewed thought that the clinical doctorate should become the entry-level degree in occupational therapy. This degree was described by several study participants as being a valued post-professional option for students who were interested in program development and leadership.

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What is the status of OTA and PTA education and practice?

Program Closures/Openings
Although a number of assistant level programs closed in the 1990’s, there is now a resurgence of interest in opening new programs at this level. Most respondents who were involved in training, hiring and supervising OTAs and PTAs reported that it is “impossible” to find them. Salaries have risen accordingly, and program enrollments are up, but the shortage remains, in part due to reduced capacity in the remaining academic programs and the increases in demand in SNFs and schools.

Supervision Requirements
Because therapy assistants must work under the supervision of the licensed/certified therapist, the supply of therapists within a geographic area influences whether OTAs and PTAs can be hired. State licensure laws have different supervision requirements that affect the employment and utilization of OTA’s and PTA’s. One interviewee who is a national level employer discussed his company’s intentional maximized placement of OTAs and PTAs in states with more lenient supervision requirements.

Non-certified COTAs
An important issue that was raised by several study participants related to the training of OTAs. It was recognized that some graduates of OTA programs do not seek licensure in order to avoid the supervision requirement present under most state licensure acts. The skill set of an OTA can be utilized in a number of roles, some of which do not require supervision by an OT or are in fact outside of traditional occupational therapy practice. These roles include activity director, case manager, and community agency service provider. The extent of this phenomenon and the impact on patients and the profession has yet to be explored.

What are the concerns about the future?

Outcomes Research and Evidence-Based Practice
One concern expressed by several of those interviewed was the need for outcomes research and evidence to support practice. As the emphasis on outcomes, quality, and pay for performance intensifies, there is a need for research evidence to solidify the role and value of occupational and physical therapy services across all settings. Both professions will need to generate and publish research findings that support effectiveness in order to be reimbursed as well as to support our claim to be an essential service. Several respondents raised concerns about the need for productive researchers who will be able to generate grant funding and research increasingly complex clinical and quality of life questions. Most educators and educational administrators expressed concern about the potential for building the capacity for research given the location of many programs in institutions where research is not a priority and the reductions in research funding at the national level. Physical therapy educators were more positive than occupational therapy educators about the increasing number physical therapists with appropriate research training.

For-profit Businesses
More OTs and PTs are working for for-profit entities, due to the growth in skilled nursing facilities and long-term care, the rapid expansion of private practice franchises and the potential growth of for-profit and specialty hospitals. Several study participants described the “corporatization” of practice settings as having a negative impact on therapists and patients. Interviewees with
experience in the long-term care sector and corporate owned outpatient practice were very clear that when profits are not meeting expectations or when a policy change has a potential negative effect, then layoffs quickly follow. Little is known about the impact of lower numbers of staff on patients. Several of those interviewed commented on how the rapid increase or decrease in physician and corporate owned practices has contributed to the volatility of the job market in the past ten years. Particularly in physical therapy, ownership of physical therapy services by non-physical therapists is expected to have a significant effect on supply/demand balance in the foreseeable future.

Potential Negative Factors in the Future for OT and PT
In general, study participants shared optimistic views of the future, but many wondered how successfully the profession(s) would rise to meet the challenges that will be presented. Concerns about reimbursement, public knowledge of and access to OT and PT, an adequate supply of practitioners to meet the needs, and quality and capacity of academic programs were mentioned as potential barriers.

The effect of the BBA illustrates the strong tie between reimbursement and demand for therapy. Payment for therapy drives the demand for practitioners. It is possible that another reimbursement change similar in effect to the BBA may occur in the future. Diversifying payers was mentioned as a strategy that benefits the profession, as excessive reliance on one source of payment creates more risk of a dramatic downturn in reimbursement.

Limited public knowledge of therapy is a potential barrier to future growth and success. Several respondents mentioned the lack of understanding by public and other stakeholder groups regarding the scope of services for each profession. This was mentioned more frequently as being a problem for occupational therapists than for physical therapists. For physical therapists the difficulty was in understanding how the role of the physical therapist related to other professions including physicians, chiropractors and occupational therapists. For occupational therapy the difficulty was at a more basic level due to limited understanding of what occupational therapy is and what occupational therapists do.

Barriers to increasing supply to meet demand that were mentioned included the shortage of faculty for new or expanding educational programs, restrictions on the entrance of foreign trained therapists due to limited availability of visas as well as the differences in education required in the United States compared to other countries, and the lack of direct funding for educational program expansion and loan forgiveness or scholarship programs for therapy students.

Discussion
The interviewing of key individuals, within and outside of the professions, allowed the investigators to take a snapshot of the current state of occupational and physical therapy education and practice and to identify key issues for the professions, now and in the future.

While the discussion is framed by the interview data, the investigators also drew on secondary quantitative data and their own knowledge of and experience with academic settings, clinical service delivery, administration, professional issues and workforce research. In addition to the intended purpose of the interviews related to supply and demand trends, the investigators
uncovered strong opinions about the workforce issues for physical therapy and occupational therapy. Although not originally part of the interview or the study, many participants who were occupational or physical therapists discussed their perception of the other discipline. Those outside the two professions described their views of physical and occupational therapy and these views did not always match how the professions view themselves. These observations have assisted the investigators in defining issues that could be addressed collaboratively and synergistically, as well as issues that are unique to one of the professions and would require separate consideration.

To persons outside of the two professions, physical and occupational therapy appear to be closely linked. It was common for study participants who were not members of either profession to raise the issue of the difficulty in articulating the differences between physical therapy and occupational therapy. Members of the professions stated that the lack of understanding is a recognized problem. This is an example of a shared issue. Some of the issues raised were unique to one of the two professions. Analyzing the relationship between occupational and physical therapy provides a useful context for our conclusions, recommendations and directions for future study.

**Occupational and Physical Therapy: Practice Domain**

**Settings and Roles**

There are many environments in which both physical therapists and occupational therapists practice (see Appendix D). Examples of environments in which the clinical practice of occupational and physical therapy overlaps significantly include inpatient physical rehabilitation, neonatal care, early intervention, lymphedema management, management of upper extremity musculoskeletal and neuromuscular disorders, industrial rehabilitation, fall prevention, and many other areas. In other practice settings the roles are substantially different. For example, in mental health care, occupational therapists are primary members of the treatment team and physical therapists generally serve in consulting roles addressing physical problems that may or may not be related to the mental health diagnosis. In school systems, where occupational therapists have a central role in addressing classroom academic performance and participation, the physical therapist is primarily addressing physical abilities that are related to mobility within and outside the classroom. A greater percentage of physical therapists work in private practice settings when compared to occupational therapists. Several respondents attempted to draw clear lines between their roles but many others, particularly those outside the professions, were clearly unable to readily articulate the similarities or differences. Although there is overlap in the sense of both disciplines focusing on helping therapy recipients improve their functional status across different domains, some respondents knowledgeable about occupational therapy voiced the opinion that the two professions approach intervention from two different paradigms. A better understanding of the differences between the professions would be facilitated by a clear analysis of the paradigms. A consensus document comparing and contrasting the two professions would be useful for those in and outside of the fields.

**Overlap and Substitution**

The effect of supply and demand on situations in which PTs and OTs can and cannot substitute for each other has not been studied. For example, the overlap may be an advantage for practice in a rural setting where only one discipline is available, and may simplify the coordination of care for the individual with complex needs who receives home therapy. Overlap is not seen as desirable by reimburers when the differences are subtle and it is confusing to therapy recipients who have difficulty differentiating the focus of each therapy and understanding why services from both are

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needed. Ideally, both disciplines would be available to meet well-identified needs; the choice of
provider would depend on the primary needs of the therapy recipient and the strengths and skills of
the team members. Qualified therapists need to know when to refer to another professional and
when their own skill set is adequate to meet the needs of the therapy recipient.

Management Structure
In some institutions, physical therapy and occupational therapy clinical departments are organized
within the same unit. In these situations, there is typically one director over the unit. Although no
data exists regarding the prevalence of this arrangement, it is not uncommon to find that
occupational therapy departments are administered by physical therapists and to a lesser extent
vice versa. The preparation for a member of one discipline to be a good leader for another is rarely
articulated and the impact on practitioners, patient outcomes and financial outcomes has not been
studied.

Provider-Induced Demand
One of the issues that was brought up was the ability of providers to influence demand for services,
known as “provider-induced demand”. Provider-induced demand results from an increased
availability of providers and the efforts they make to build a practice as a potential force that would
create demand. For example, if the number of therapists who want to provide pediatric therapy in
a specific geographic area increases and they open therapy centers serving children, it may be the
case that more children in that geographic area receive therapy services due to the increased access
to care and marketing/education directed to parents. Provider-induced demand may also occur
when a corporation perceives high profitability from therapy services, possibly due to prevailing
reimbursement regulations and practices. Expansion of therapy services to take advantage of
enhanced reimbursement opportunities could be targeted again by marketing and education of
potential patients and clients. The effort of providers to influence demand could also work in
reverse, as one study participant explained, as when they are short on staff, they may try to
convince referral sources, administrators and others that therapy is not needed so that caseloads
can be lowered and more easily managed by a fixed number of clinicians. Although the impact of
providers on demand was mentioned frequently, the understanding of the impact was primarily
speculative and it is not clear how provider-induced demand is affected by a shortage of
practitioners or how it ultimately influences overall demand. Because both professions have
historically experienced a shortage situation, except for the brief period in the late 1990’s, it is
unclear how demand would be affected by an increased supply of practitioners.

Salaries and Reimbursement
One issue that both professions face is the pressure to raise salaries despite the lack of increase in
reimbursement. The current shortage has resulted in higher salaries and benefits, as well as liberal
sign-on bonuses of up to $10,000 and loan repayment programs. This recent growth in salaries
provides evidence of the existence of a shortage of practitioners. It is not clear how high salaries
can rise if reimbursement from a payer sources, such as Medicare, Medicaid and managed care is
capped and revenue from therapy services continues to rely primarily on what third parties payers
are willing to pay. According to one interviewee, therapists are getting so expensive to hire that
some contracts would lose money for their business, so they decline to bid on that contract. It is
not clear how third party ownership of therapy services (corporations and physicians) impacts on
the financial outcomes of those services. It is possible that reimbursement is adequate to
compensate the direct providers of services and cover overhead costs but not to provide profit for
those who are not directly involved in the provision of services.

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Geographic Variation in Salaries
The median salary for full-time occupational therapists rose 24% between 2000 and 2006, compared to no increase from 1997 and 2000. Increases in the median salary for occupational therapists between 2000 and 2006 ranged from 14% in the Mountain region to 27% in the South Atlantic region (AOTA, 2006a) (salaries not adjusted for inflation). In physical therapy, between 1999 and 2005 the increases in earned income ranged from 25% in the East South Central Region to 36% in the mountain region (APTA, 2006a). These salary increases provide evidence that demand exceeds supply, with the rate of salary increases varying in different regions of the country.

Salaries and Practice Settings
Median salaries differ across practice settings. In occupational therapy, median salaries in 2006 for therapists not employed in academia or schools/early intervention varied from $55,000 to $62,000 (some school/early intervention personnel are on a ten month contract, which makes salary comparison difficult). The salaries for those with 0-5 years of experience varied between $46,000 in outpatient settings to $55,000 for those in skilled nursing/long-term care (AOTA, 2006a). This wide range in salaries for new therapists may be indicative of the difficulty filling positions in skilled nursing facilities that was described by interview interviewees, and the perceived desirability of working in an outpatient setting.

Salary data for PT indicate that the median salary for a PT in 2006 was $70,000. Of interest here is that while salary increases from 1999 – 2005 occurred across all settings, from 2004-2005 salaries in private practice clinics did not increase despite increases of 7% -11% in other settings (APTA, 2006a). Although practice owner respondents stated that physical therapists working in outpatient pediatric settings see fewer patients than those working in outpatient clinics serving adults, at this point in time there is no indication that salaries paid to physical therapists employed in pediatric outpatient clinics are lower than those in other settings. If salaries in pediatric clinics were to fall significantly behind other practice areas, therapists’ interest in practice in this setting could be impacted significantly. Given that pediatric occupational and physical therapy is identified as a growth area, the pressure to increase revenue through increased patient productivity in order for salaries to keep pace with other practice areas should receive further attention.

Occupational and Physical Therapy: Reimbursement and Regulation

Medicare
Payment regulations are the same for physical therapists and occupational therapists for many areas of practice. In particular, federal payments under Medicare Part B are using a fee schedule that is based on procedure codes, not on the discipline of the provider. However there are some differences such as with the application of a total payment cap for outpatient therapy services under Medicare Part B. The dollar limit for occupational therapy is the same as for physical therapy and speech therapy combined (Oshin et al, 2002). In contrast, in home health, occupational therapy can only be provided if physical therapy, speech therapy, or nursing services are initially required, while physical therapy can be the sole provider (AOTA, 2005b). Differences such as this are not supported by evidence and appear to be historical and political in origin.

Licensure
State licensure laws and the use of certification are significantly more varied than federal regulations. Physical therapy and occupational therapy have not pursued the same path with regard
to licensure and the efforts to provide the public with direct access to physical therapy services is not receiving the same attention in occupational therapy. The impact of different state licensure laws for the two professions in terms of the need for physician referral would certainly have workforce implications, whether this supports collaboration or points to growing differences between the two professions is still to be determined. In addition to concerns over the efforts to achieve unrestricted access directed by physical therapists, some occupational therapists are protesting what they believe to be added language in physical therapy practice acts in the area of “functional training in self-care and in home, community or work reintegration.” Although this terminology has been in physical therapist education program accreditation criteria and practice acts for many years, the AOTA has taken the position that this terminology is evidence of PTs encroachment into the scope of practice of OT.

Relationships with Other Professions
The concern over overlapping roles of PT and OT and the desire to articulate differences in roles is longstanding and not restricted to relationships between these disciplines. Each profession also has “turf” issues with other disciplines. For PT, the turf battles exist with physicians, athletic trainers, chiropractors and exercise physiologists in addition to OT. For OT, there is concern over infringement on OT practice or in barriers to growth from physical therapy, recreational therapy, developmental therapy and social work. The relationship between practitioners within a specific practice setting is often fairly collaborative although not without conflict. The relationship in the political arena is rarely collaborative although there have been periods of time in which the professions worked together on specific issues. It was clear in talking to leaders from both professions that the difficulties were recognized but the means to address those difficulties were not obvious.

Outcome Incentive Programs
There have recently been initiatives by managed care organizations and the federal government to tie reimbursement incentive programs to outcomes. It is unclear what the impact of such as “pay for performance” program will be on therapists and their employers. Medicare has recently announced a new program of bonuses up to 1.5% that will be available to therapists that meet certain quality standards (CMS Manual, 2007). It is likely that there will be measures of patient satisfaction as well as outcome indicators that will be used to determine eligibility for this bonus. A shortage of therapists may result in employers being unable to meet standards for initiating services in a timely manner, delivering adequate intensity of services, and providing them for the duration optimal for the patient. This incentive program has the potential to impact demand for the professions, particularly in certain practice settings with heavier reliance on third party reimburers and Medicare and those that are mandated to report outcomes.

Occupational and Physical Therapy: Education Domain

Student Recruitment
Educational programs for physical and occupational therapists and assistants are often, although certainly not always, located in the same institutions and in the same administrative units. The content of the education programs for therapists has some similarity yet attempts to provide interdisciplinary coursework have been limited and often not sustained. Little is known about the overlap in the applicant pool or whether or not at points earlier in the educational pipeline students are open to or exploring both careers. Although recruitment efforts might be conducted in the same venues, there is limited information available about whether or not undergraduates or high
school students considering careers in health care make comparisons between physical and occupational therapy. For example, it would be of value to know if increasing competition to get into physical therapy school causes an upsurge in those that decide to pursue occupational therapy. It would also be important to know if those students admitted to OT programs who were initially interested in PT finish their occupational therapy program and are satisfied with their career. How students perceive occupational and physical therapy compared to other fields is also an area where little or no data exists. It may be that the potential higher salaries, a more socially prestigious image, or more loan forgiveness programs in other fields will that draw students away from physical and occupational therapy. Knowing the reasons that compel students to choose a career in occupational therapy versus physical therapy versus another profession would allow for increased efficiency and success in recruitment of the right candidates.

Program Expansion
In order to meet both current and future demand there is a need to find strategies to increase the supply of therapy providers. With the robust applicant pool in physical therapy and the expanding pool in occupational therapy, it appears that the academic programs create a bottleneck in the system with applicant demand on one side and employer demand on the other. Employers, state government, university and community college administrators and potential students are pressuring academic institutions to expand enrollment in existing programs or open new programs. However, even if the pool of applicants is adequate to support this, the faculty shortage prevents programs from expanding or opening. Both professions face this situation. One of the most challenging aspects of addressing the concept of faculty supply is the reality that there is no validated target for number of faculty, mix of clinical and tenure/tenure track faculty, or core and adjunct faculty. The breadth of curricular content and the wide variety and intensity of faculty effort directed toward scholarship, service and practice is a particular challenge in setting benchmarks for the optimal mix and size of the faculty for a given program enrollment.

Faculty Credentials and Doctoral Preparation
One area where the two professions differ is the requirements by accrediting agencies with regard to the appropriate credentials for faculty. The percentage of physical therapy faculty prepared at the doctoral level has been increasing steadily and was 75% in 2006 (APTA, 2007a). The Commission for Accreditation in Physical Therapy Education requires all physical therapy educators to engage in scholarship, a term which is broadly defined (CAPTE, 2004) and states that a blend of doctorally prepared and expert clinician faculty is the required standard. In master’s occupational therapy programs, recently adopted standards specify, “By July 1, 2012, the majority of full-time faculty who are occupational therapists must hold a doctoral degree” (AOTA, 2007b, p.8). This means that for any one program, the majority of the faculty must hold a doctoral degree. For entry-level doctoral programs, whose standards go into effect in January 2008, all full-time faculty members must hold a doctoral degree (AOTA, 2007b). Given that only 45% of occupational therapy faculty held doctoral degrees in spring 2005 (AOTA, 2005a), this will require a ramping up for both individuals and departments.

With a greater need for doctorally prepared faculty, it is important to have doctoral options available in a variety of formats and with different program emphasis. For example, although 32% of the occupational therapy faculty in 2005 held a PhD (32%), 7% of the sample held an EdD and 4% of the sample had an OTD (AOTA, 2005a). In PT, 49% of faculty held the PhD, 16% had a professional doctorate and 10% had the DPT in 2005 (APTA, 2007a). Several of those interviewed spoke about the urgent need to prepare faculty for positions in research-intensive universities, via
post-doctoral training and mentoring. Research focused departments are hiring faculty with backgrounds in other disciplines, such as psychology and neuroscience, as they are not able to fill their tenure track positions exclusively with occupational therapists and physical therapists. While this strategy may be useful and even beneficial, a critical mass of individuals within the discipline is needed to teach core therapy evaluation and intervention courses.

**Adjunct Faculty**

The faculty shortage may promote more extensive use of part-time adjunct faculty who may teach a course or parts of courses. These are often clinicians who are not involved in departmental committees, student advising, and curriculum design and evaluation. However, for courses that are directly related to preparation for practice, clinicians who are strong teachers are considered to be assets for programs. It is not clear what impact the increased use of adjunct faculty would have on the cohesiveness of the curriculum and the ability to carry out all the roles of faculty.

**Occupational and Physical Therapy: Professional Issues**

**Direct Access**

Direct access allows patients/clients to access therapy services directly without a physician’s referral being required. The issue of ownership and autonomy are primary concerns of the American Physical Therapy Association (APTA, 2000) but are not included in the American Occupational Therapy Association’s strategic plan (AOTA, 2007e). The reason for the difference in level of concern should be further explored to determine how the future of both professions might be affected. One professional leader who was an OT described direct access as less of an issue for occupational therapy because of the extent to which occupational therapists work in community settings and focus on participation rather than impairment. Another perspective is that the smaller proportion of OTs in private practice may contribute to considering direct access a lower priority. However, occupational therapists in outpatient settings or school settings may see the need for physician prescription as a potential barrier to services. If reimbursers and regulation continue to require physician referral or prescription, the ability of the disciplines to respond to health and wellness needs and other non-medical needs of society will be constrained. Also, a negative impact on the workforce could result from perception that the disciplines are not autonomous practitioners, and could negatively affect applicant pools and attrition from the professions.

**Relationship between the Professions**

The study participants identified that there are some very similar and some very different concerns between the professions but they were not able to describe a path that could lead to collaboration where similar concerns are found. There was a lack of agreement regarding whether the two professions are coming closer together or moving further apart. Professional leaders and practice owners recognized the potential negative impact of increasing the competition between the two professions. It was suggested that in times of adequate personnel there may be more “fighting over the same piece of the pie” but this should not be an issue in a shortage situation. Occupational therapists spoke much more forcefully about the concern that physical therapy was “taking over” or “attempting to squash” occupational therapy. Occupational therapy interviewees specifically described physical therapy as being the dominant profession in physical rehabilitation settings, with occupational therapists having a significantly greater presence and more recognition in pediatric practice, particularly in the schools. Physical therapists expressed concern over the negative effects of a poor relationship between the professions but did not identify efforts to develop a more collaborative approach.
Although not fully explored, it appeared that both professions were very focused on external forces that were negatively influencing their futures or creating barriers to growth. While efforts to prepare within the professions for future growth were articulated, there was much greater concern voiced about preventing encroachment or loss of scope of practice due to external forces. It is not clear whether either profession will benefit more from an internal focus on demonstrating value to society and meeting the needs and demands for services rather than on monitoring and challenging the actions of groups outside the profession, such as other therapists, physicians, chiropractors, and athletic trainers. It is likely that both internal and external efforts are needed to some extent. However, given the size and resources within the physical therapy and occupational therapy professions individually in comparison to the potential resources of those that would attempt to exert external influence, it is the opinion of the investigators that collaboration between the professions and a focus on demonstrating the value of rehabilitation across all settings would serve both professions well.

**Summary and Conclusions**

Is there a shortage of occupational therapy or physical therapy practitioners? Answering this question is important for individuals and many groups. Over the one year time period during which interviews were conducted, the recognition of a shortage increased. In the initial interviews, study participants were less certain about the presence of the shortage although it was recognized as affecting some locations and some areas of practice. By the final interviews, the shortage was a given and those interviewed were only uncertain about how severe the shortage would become and what the impact of the shortage might be.

The conclusion of the investigators is that a shortage of both physical therapy and occupational therapy practitioners does exist. Nearly all of those interviewed who were familiar with the current workforce scene stated that there is a shortage of occupational therapists and physical therapists as well as for occupational therapy assistants and physical therapist assistants. The shortage was perceived to be due to shifts in both supply and demand. Employers, practice owners, and practice supervisors uniformly discussed their difficulty in finding adequate numbers of appropriately prepared personnel for their positions. These interviewees had more intimate knowledge of local job markets as compared to educators and professional leaders who were less certain of the severity of the shortage.

The degree of the shortage varies between urban and rural locations, by state and region, among practice settings and between specialties. It is not clear if the degree of shortage is different for therapists and therapist assistants. The quantification of the shortage is confounded by the effect of continuous changes in demand, the potential for substitution of one provider for another and the changes in numbers of practitioners. Given the widespread opinion that there is an incomplete understanding of how occupational therapy (and to some extent physical therapy as well) can contribute to the health and function of the population, there is limited ability to discuss what supply of practitioners is needed either now or in the future. It can be concluded that the supply of practitioners we have today and will have in the next few years is not adequate to meet existing demands, based solely on existing positions and vacancies.

In some settings specific levels of service are mandated by law or payment systems (school systems, early intervention, inpatient rehabilitation facilities, and skilled nursing facilities). The demand in
these settings is relatively predictable given a predictable number of persons in need of services, assuming reimbursement and legislative guidelines stay consistent with what they are today. In settings in which services are not mandated and are therefore more affected by market forces (acute care, outpatient orthopedics and pediatrics, home modifications) demand is less predictable. It was apparent after reviewing available data, analyzing interviews and looking at historical trends in PT and OT, that there has only been a brief period in which supply met demand. Accurate quantification of an adequate supply will be difficult but it is possible to identify those practice areas that are likely to continue to exhibit increased need/demand and to therefore direct efforts in managing workforce to address those specific needs.

It is also clear that there is not, at this point, a coordinated effort to address workforce issues. Both of the primary professional associations for physical and occupational therapy and several states were identified as having initiated efforts. These efforts appear to address the workforce at a global level – overall numbers of practitioners and overall demand. A clear understanding of physical therapy and occupational therapy workforce issues depends on at least the consideration of the educational pipeline, the regulatory environment for practice, how services are and will be paid for, the need and demand for services currently and in the near future and the entry and attrition of providers. It is time to look at sectors of the workforce specifically and to develop action plans to address specific problem areas rather than continuing to approach the problem at a global level. The factors affecting the supply and demand for services for the elderly are significantly different than those affecting supply and demand for children. The same is true for factors affecting supply and demand in urban versus rural areas or in certain regions of the country. Meaningful action depends on the identification of specific goals.

**Recommended Strategies to Address Concerns**

If current demand as well as projected increasing demand is to be met there is a need to find sector specific strategies to increase the supply of therapy providers. Further research and action planning must be done to address the many issues and concerns that were brought to the forefront by this study. It is strongly recommended that both professional associations, employers, and relevant federal agencies responsible for health workforce preparedness join forces to do proactive planning and workforce analysis, and act to address some of the many issues raised by this study. Recommended strategies to target specific concerns follow.

1. Applicant shortage

Although the number of applicants may be adequate in physical therapy professional programs the applicant pool is not ethnically and racially diverse. In occupational therapy there was quite a large shortfall of qualified applicants in 2005, the last year for which data are available. Strategies to address this include:

- Professional associations should continue to develop student recruitment programs including the use of print materials, electronic media, the Internet as well as face-to-face programs. Recruitment should be aimed at those with general interest as well as those with specific interests (e.g. geriatrics, pediatrics, research).
- Pursuit of federal, state and private funding for scholarships or loan forgiveness programs for students who commit to practice in underserved areas.
• Outreach to pre-health advisors at colleges and universities to enhance their ability to
direct qualified candidates to physical therapy and occupational therapy careers.
• Development of clubs and service organizations at the high school and college level to
promote interest and understanding of physical therapy and occupational therapy as
career choices.
• Specific strategies to increase the diversity of the applicant pool and the enrolled
students, with specifically designed resources.

2. Inadequate supply of new graduates

• Pursuit of federal, state and private funding to support expanding high quality programs
for both therapists and assistants that want to expand but don’t have the resources to
do so.
• Target states or regions that have low provider to population ratios for program
development or expansion.
• Develop funding for doctoral and post-doctoral training for therapists who show talent
and interest in an academic career.
• Target funds for doctoral training to those who have expertise in areas in short supply
such as chronic disease management in PT and pediatrics in OT.
• Explore the possibilities of employers forming a consortium to support program
expansion by funding faculty positions.

3. Practitioner shortage

• Investigate the possibilities of expanding the number of qualified foreign-trained
practitioners that can enter the U.S. and complete certification and licensure
requirements for practice.
• Focus on retention of practitioners and prevention of attrition by promoting
professionalism in employment settings. This should include rewards and recognition
for positive patient outcomes, autonomy in decision-making and growth opportunities
as well as control over work schedules and the work environment.
• Provide re-entry programs for practitioners who want to re-enter the field or to explore
new practice areas. These programs should include a didactic component as well as
mentoring. Programs could be provided through partnerships of academic and clinical
institutions and the clinical institution or special interest groups could sponsor re-entry
students.

4. Relationship between physical and occupational therapy

• Professional associations should increase efforts at the national and state levels, as well
as in special interest groups, to work collaboratively on issues of mutual concern and
benefit, such as loan forgiveness programs for students, support for educational
program expansion, and reimbursement/policy initiatives.
• Build respect and commitment to collaboration between disciplines by educating
students on the preparation and roles of all health professionals and maximizing
opportunities for interdisciplinary learning experiences.
• Create opportunities for practitioners to shadow team members from other disciplines.
5. Knowledge of PT and OT by people outside the field.

- The professional associations should collaborate on the development of educational materials for the public, insurers, and legislators that illustrate the differences and the complementary nature of physical and occupational therapy.

**Limitations of This Study**

This project was intended to identify critical workforce issues and questions for further study. Originally, the study results were to include an analysis of therapy utilization data from a variety of sources. It was discovered that although some data are available, those data sets would not provide an accurate or adequate picture of demand. For example, Medicare data on outpatient therapy utilization is available (Olshin et al, 2002). However, the provider definition is quite broad, so that treatment provided incident to a physician office visit by an unlicensed provider is billed as physical or occupational therapy and cannot be differentiated from services provided by a licensed provider. In 2000, 12% of outpatient therapy for Medicare recipients was provided by an unlicensed or uncertified physical or occupational therapy practitioner (Olshin et al, 2002). Data on therapy utilization for Medicaid recipients must be gathered state-by-state, covered services vary and variation in levels of coverage cannot be accounted for in an analysis of demand. Therapy utilization data from private insurance companies would have to be provided voluntarily by each company separately. While doable from some companies, it would not be possible to collect a valid sample representing services provided by all private insurance companies, as the population of companies is unknown. Data on therapy services delivered in school systems were accessed, however, time trend data is not existent and therefore the value of the data was limited. Quantitative demand data is elusive and difficult to obtain and analyze. The few studies available on demand in occupational or physical therapy are limited to a specific geographic region or practice setting (Powell, Griffith & Kanny, 2005).

Projections of future growth in the professions from the Bureau of Labor Statistics are limited in value because of the many factors affecting supply and demand such as future changes in reimbursement or the expansion of practice into new settings (BLS, 2007a; BLS, 2007c). In 1999, when the job market changed and positions were relatively hard to find, the BLS was still predicting higher than average short-term growth in positions for therapists and assistants in both professions. The model used to predict change is not sensitive enough to factors influencing supply and demand trends.

This qualitative study was undertaken because of the opportunity to more deeply examine workforce issues and supply and demand trends that are not well explained by the available quantitative data. However, it is recognized that although care was taken to recruit participants from a variety of areas, it is unknown if their opinions reflect the group from which they were chosen. Therefore, generalizability of results is hampered. While it is recognized that a snapshot provides a time limited view and is shaped by the specific individuals interviewed, a great deal of insight was gained which will be useful in planning and taking action in a number of areas.

**Areas for Future Study**

One of the primary conclusions drawn by the research team was the recognition that workforce research needed to move toward looking at issues specific to practice setting, geographical region...
and practitioner characteristics. Data collected by the professional associations, the federal
government and state licensing agencies is adequate for identifying general trends in supply. In
order to take appropriate action much more specific information is needed.

The investigators have identified a significant number of areas for future study. These include:

Development of Models & Methods for Supply Analysis
Development of Models & Methods for Demand and Needs Analysis
Describing and Quantifying Trends in Supply/Demand Balance
Describing the Impact of Legislation Related To Practice Acts
Describing the Impact of Legislation Mandating Specific Levels of Service Delivery
Impact of Health Care Economics and Health Insurance Policy
The Educational Pipeline for New Practitioners
  Interest in PT/OT Careers
  Applicant Pool Numbers, Diversity and Qualifications
    Cost
  Degree Level Changes
  Faculty Supply
  Program Capacity
  Issues Specific to Clinical Education
The Entrance of Foreign Trained Practitioners
Describing Rates and Impact of Attrition
  Work Effort Changes
  Early Career vs. Late Career Departure
  Re-entry Support
Describing Supply & Demand across Multiple Dimensions
  Practice Settings
  Patient/Client Populations
  Geographic
  Population Density
Describing Practice Models
  Employment Relationships in Health Care Organizations & Schools
  Employment Relationships in Corporations
  Employment Relationships with Physicians
  Self-Employment and Group Practice
Describing Scope of Practice
  Role of PTA and COTA
  Role of Other Therapist Extenders
  Overlap Between PT and OT
  Overlap With Other Disciplines
  Public Understanding
  Areas for Practice Expansion
  Areas Vulnerable To Being Lost or Restricted
The Need for Research Productivity and the Impact of Research Findings
  Supply of Research Trained Faculty
  Providing Evidence to Support Effectiveness and Efficacy
  Measuring outcomes to meet regulatory and reimbursement requirements
It is hoped that information derived from the study and this report can help guide future workforce research in occupational and physical therapy, ascertain potential funding for this research, and better inform health workforce planners, employers, educators, and policy makers about workforce issues. Other benefits may include an enhanced understanding of current access to care and the assessment of future growth areas as well as strategies to build an adequate sized and well-trained workforce. Through this study, occupational and physical therapy practitioners will be better prepared for the professions’ future and how to serve best the needs of the population who utilize physical and occupational therapy services.

Acknowledgements: We express our gratitude to those who agreed to be interviewed as they were critical to this study. Assistance with various aspects of this study was provided by Workforce Center team members Judith Cooksey, Surrey Walton, Gayle Byck, and Louise Martinez, and graduate students Chiu-Fang Chou, Kate Hermanowicz and Linda Tran. Marcia Finlayson provided valuable feedback. The Midwest Regional Workforce Center was funded through a cooperative agreement (# U79 HP 00002) with the Bureau of Health Professions of the Health Resources and Services Administration, which is part of the U.S. Department of Health and Human Services. Funding was also provided by the University of Illinois at Chicago Office of the Vice-Chancellor for Research and the Dean of the College of Applied Health Sciences. Data essential to the study were provided by the American Occupational Therapy Association and the American Physical Therapy Association.

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**Relevant Web Sites**

www.bls.gov
The source for the *Occupational Outlook Handbook* and other employment data

http://bhpr.hrsa.gov/healthworkforce/profiles/default.htm
Contains health workforce state profiles that are available online or in hard copy at no cost

www.uic.edu/sph/ichws
The Midwest Center for Health Workforce Studies at the University of Illinois at Chicago

www.aota.org
The American Occupational Therapy Association

www.apta.org
The American Physical Therapy Association
Appendix A
Interview Guide

Appendix B
Study Participant Demographics

Appendix C
Related Data on Trends in Academic Programs, Students and Applicants

Appendix D
Demographic Data on Practitioners from 2006 and 2007
Appendix A
Interview guide

Revised Interview Guide for Occupational and Physical Therapy Key Informants

Note – several modifications were made when interviewing occupational and physical therapists that were currently practicing or supervising a specific practice setting, e.g. asking them about the supply and demand trends in their specific practice setting.

*********************************************************************************

Thank you for agreeing to participate in this interview. My name is ______ and I am an interviewer on the research team. Before we begin, I would like to review some information with you about the interview process. During the interview I will be asking you a number of questions about the (occupational and/or physical) therapy profession(s). The questions will focus on the key issues affecting the (occupational and/or physical) therapy workforce in the past, present and future.

We have received your informed consent form, and want to confirm your decision verbally. At this point in time, do you agree to participate in the interview? YES/NO. Do you consent to my making an audiotape of our interview, which will only be used for research purposes to allow us to review and clarify any responses? YES/NO. If any of the questions make you uncomfortable please let me know; you will not be obligated to answer them. Do you have any questions before we begin? YES/NO.

*A. Interview Set-Up*
A1. Date of Interview:
A2. Interviewed by:
A3. Time Interview Began: Time Ended:

*B. Educational training and professional experience*

*B1. Please briefly describe your educational training, and work experience related to (occupational and/or physical) therapy. Include your current employer and position.*

*B2. Are you qualified to speak about the occupational therapy workforce OR the physical therapy workforce, or BOTH the occupational and physical therapy workforce?*

*B3. What professional experiences and activities have informed your knowledge about the supply and demand for (occupational and/or physical) therapists?*

This could include work experience in different settings and with various populations, management and supervisory roles, professional organization leadership roles, experience with reimbursement, educators’ experience with student recruitment, etc.

*C. Themes and Critical Issues*

In this part of the interview I will be asking you about the supply and demand for (occupational and/or physical) therapists and therapy assistants.

C1. Over the past five years, since 1999, what have you seen as significant changes in the balance between supply and demand for therapists and therapy assistants across the profession(s) of (occupational and/or physical) therapy? How do you perceive the current supply/demand balance?

C1A. Replaces C1 for occupational and physical therapists and their employers only: Over the past five years, since 1999, what have you seen as significant changes in supply and demand for therapists and therapy assistants in your practice area? (such as in school systems, long-term care, sports medicine, etc) How do you perceive the current supply/demand balance?
For example, is there a growing shortage of therapists or assistants, a growing surplus, supply has been evenly balanced with demand, or a shortage or surplus in certain practice settings? Are there different scenarios for therapists vs. assistants?

C2. What factors most heavily influence demand?

For example, is demand influenced by reimbursement changes, marketing of services, greater public desire for therapy services, or physician awareness and referral?

C3. What is the impact on the profession and on therapy recipients when the supply of practitioners isn’t adequate to meet the demands?

C3A. Replaces C3 for occupational and physical therapists and their employers only: What is the impact in your setting when the supply of practitioners isn’t adequate to meet the demand?

For example, does a longstanding vacant position get closed, do others take over those responsibilities, do fewer patients/clients get services, are services delivered for a shorter period of time, are more groups utilized, are patient outcomes affected, do salaries go up, or are contract services used more?

C4. Looking ahead to the next five years, what growth areas do you anticipate?

For example, do you think that there will be an increase in jobs in specific practice settings, such as skilled nursing facilities, schools, or community agencies? Will there be an increase in demand for certain types of practitioners? For example, OTAs (or PTAs), certified hand therapists, driving rehabilitation providers? Will private practice expand into new areas?

C5. What are some of the challenges to insuring an adequate supply?

For example, do you think there are too few academic programs, too few applicants, too many limitations on immigration, salaries not high enough, reimbursement not adequate enough to support higher salaries, more people leaving the field, demand is going up faster than supply in certain areas, or the work is not perceived positively?

C6. In the next five years, what should be done to build an adequate supply of well-trained practitioners for the future?

For example, should there be efforts in student recruitment, opening new educational programs, bringing back practitioners who have left the field, offering more specialized training in certain areas, implementing the clinical doctorate as the entry level-degree, or certifying fieldwork educators?

I have one more question about the future, projecting ten years ahead.

C7. In the next ten years, what opportunities and challenges do you perceive for the profession(s)? How will these opportunities and challenges potentially advance the profession or hold it back?

For example, will there be adequate reimbursement for therapy delivered in skilled nursing facilities, will therapy be more directed at enhancing full participation in society for people with disabilities, will managed care erode inpatient acute care positions, will the public’s willingness to pay out-of-pocket for therapy grow, will there be an adequate supply of therapy assistants, will attrition increase, will salaries be competitive?

* D. Resources

D1. Are you aware of funding sources for research about the occupational and physical therapy workforce?

D2. Are there other people you think we should interview for this study?

Thank you for taking time out of your busy schedule to participate in this study.

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Appendix B
Study Participant Demographics (N = 40)

<table>
<thead>
<tr>
<th>Primary role</th>
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<tbody>
<tr>
<td>Educator</td>
<td>9</td>
</tr>
<tr>
<td>Profession Leader</td>
<td>8</td>
</tr>
<tr>
<td>Practice Supervisor</td>
<td>6</td>
</tr>
<tr>
<td>Practice Owner</td>
<td>5</td>
</tr>
<tr>
<td>National Level Employer</td>
<td>5</td>
</tr>
<tr>
<td>Regulatory/ reimbursement</td>
<td>4</td>
</tr>
<tr>
<td>Practitioner</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Practice setting (if applicable)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hospital: acute care</td>
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</tr>
<tr>
<td>Hospital: rehab</td>
<td>4</td>
</tr>
<tr>
<td>SNF</td>
<td>3</td>
</tr>
<tr>
<td>Schools</td>
<td>3</td>
</tr>
<tr>
<td>Outpatient clinic (adult)</td>
<td>3</td>
</tr>
<tr>
<td>Home health</td>
<td>2</td>
</tr>
<tr>
<td>Outpatient pediatric clinic</td>
<td>2</td>
</tr>
<tr>
<td>Other (assisted living, mental health, work injury prevention, home/work modifications, community)</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>OT/PT background</th>
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<tbody>
<tr>
<td>Credentialed as an OT or OTA</td>
<td>17</td>
</tr>
<tr>
<td>Credentialed as a PT or PTA</td>
<td>11</td>
</tr>
<tr>
<td>Neither OT nor PT credentials</td>
<td>12</td>
</tr>
</tbody>
</table>

| Knowledgeable about OT & PT     | 20      |
| Knowledgeable about OT only     | 12      |
| Knowledgeable about PT only     | 8       |

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>African-American or Black</td>
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</tr>
<tr>
<td>Hispanic</td>
<td>2</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>22</td>
</tr>
<tr>
<td>Unknown</td>
<td>14</td>
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<table>
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<tr>
<th>Regional perspective</th>
<th></th>
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<tr>
<td>National Perspective</td>
<td>31</td>
</tr>
<tr>
<td>Northeast</td>
<td>18</td>
</tr>
<tr>
<td>South</td>
<td>6</td>
</tr>
<tr>
<td>Midwest</td>
<td>11</td>
</tr>
<tr>
<td>West</td>
<td>8</td>
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<table>
<thead>
<tr>
<th>Gender</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>12</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
</tr>
</tbody>
</table>
Appendix C: Related Data on Trends in Academic Programs, Students, and Applicants

Occupational Therapist: Accredited Programs, 1992-2007

Source: AOTA, 2006c & AOTA, 2007c

Occupational Therapist: Student Enrollment, 1994-2007

Source: AOTA, 2006c & AOTA, 2007c

Physical Therapist: Accredited Programs, 1992-2007

Source: APTA, 2007a

Physical Therapist: Student Enrollment, 1996-2007

Source: APTA, 2007a
Appendix C: Related Data on Trends in Academic Programs, Students, and Applicants (con’t)

Occupational Therapy Assistant: Accredited Programs, 1992-2007

Source: AOTA, 2006c & AOTA, 2007c

Occupational Therapy Assistant: Student Enrollment, 1994 - 2007

Source: AOTA, 2006c & AOTA, 2007c

Physical Therapy Assistant: Accredited Programs, 1992-2006

Source: APTA, 2007b

Physical Therapy Assistant: Student Enrollment, 1994-2006

Source: APTA, 2007b
Appendix C: Related Data on Trends in Academic Programs, Students, and Applicants (con’t)

**Occupational Therapist: Enrollment vs. Capacity of Entering Class, 2004-2006**

Source: AOTA, 2007c  
Note: Total of unused slots for 2004 - 2006 was 6318

**Occupational Therapist: Applications to Programs, All Levels, 2004 - 2006**

Source: AOTA, 2007c

**Physical Therapist: Enrollment vs. Capacity of Entering Class, 1997-2006**

Source: APTA, 2007a  
Note: Total of unused slots 1997-2006 was 7232

**Physical Therapist: Applications to Programs, All Levels, 1997-2006**

Source: APTA, 2007a

Note: The application count is the total number of applications across programs, not of individuals, since individuals can apply to multiple programs.

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Appendix C: Related Data on Trends in Academic Programs, Students, and Applicants (con’t)

*Occupational Therapy Assistant: Enrollment vs. Capacity of Entering Class, 2004 - 2006*

- **Number of unused slots**
- **Number of enrolled students**

Source: AOTA (2007c)  Note: Total of unused slots for 2004-2006 was 3318

*Occupational Therapy Assistant: Applications to Programs, All Levels, 2004-2006*

Source: AOTA (2007c)

*Physical Therapy Assistant: Enrollment vs. Capacity of Entering Class, 1997-2006*

- **Number of unused slots**
- **Number of enrolled students**

Source: APTA, 2007b  Note: Total of unused slots 1997-2006 was 9078

*Physical Therapy Assistant: Applications to Programs, All Levels, 1997-2006*

Source: APTA, 2007b

Note: The application count is the total number of applications across programs, not of individuals, since individuals can apply to multiple programs.
### Appendix D
Demographic Data on Practitioners from 2006 and 2007

#### Number of licenses held by practitioners

<table>
<thead>
<tr>
<th></th>
<th>OT</th>
<th>OTA</th>
<th>PT</th>
<th>PTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT data is from 2006; PT data is from 2004</td>
<td>104,742</td>
<td>32,558</td>
<td>203,161</td>
<td>72,443</td>
</tr>
</tbody>
</table>

(some practitioners may hold licenses in multiple states)

Source: AOTA 2006b; Federation of State Boards of Physical Therapy, ND

#### Occupational Therapy Employment Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>OT (%)</th>
<th>OTA (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School system (preschool, primary, secondary)</td>
<td>29.6</td>
<td>29.6</td>
</tr>
<tr>
<td>Hospital (non-mental health)</td>
<td>23.5</td>
<td>17.5</td>
</tr>
<tr>
<td>Skilled Nursing Facility/Extended or Intermediate Care Facility</td>
<td>15.4</td>
<td>36.3</td>
</tr>
<tr>
<td>Free standing outpatient</td>
<td>11.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Patient's home/home care</td>
<td>7.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Academic institution (post-secondary)</td>
<td>6.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Mental Health</td>
<td>3.6</td>
<td>4.2</td>
</tr>
<tr>
<td>Community</td>
<td>1.6</td>
<td>2.1</td>
</tr>
<tr>
<td>Other</td>
<td>1.9</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Source: AOTA, 2006a

#### Physical Therapy Employment Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>PT (%)</th>
<th>PTA (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private outpatient office or group practice</td>
<td>41.5</td>
<td>36.6</td>
</tr>
<tr>
<td>Health system or hospital based outpatient facility or clinic</td>
<td>14.5</td>
<td>13.6</td>
</tr>
<tr>
<td>Acute care hospital</td>
<td>13.1</td>
<td>12.1</td>
</tr>
<tr>
<td>Academic institution (post-secondary)</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Patient's home/home care</td>
<td>7.9</td>
<td>6.6</td>
</tr>
<tr>
<td>Skilled Nursing Facility/Extended or Intermediate Care Facility</td>
<td>5.6</td>
<td>16.2</td>
</tr>
<tr>
<td>School system (preschool, primary, secondary)</td>
<td>4.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Sub-acute rehab hospital</td>
<td>3.5</td>
<td>5.3</td>
</tr>
<tr>
<td>Other</td>
<td>5.0</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Source: APTA, 2007d

#### Employment status

<table>
<thead>
<tr>
<th>Status</th>
<th>OT(%)</th>
<th>OTA(%)</th>
<th>PT(%)</th>
<th>PTA(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time (30 hours or more per week)</td>
<td>77.6</td>
<td>82.1</td>
<td>66.0</td>
<td>73.3</td>
</tr>
<tr>
<td>Part-time (less than 30 hours per week)</td>
<td>22.4</td>
<td>17.9</td>
<td>11.0</td>
<td>11.5</td>
</tr>
<tr>
<td>Full-time self-employed</td>
<td>unknown</td>
<td>unknown</td>
<td>12.7</td>
<td>3.6</td>
</tr>
<tr>
<td>Part-time self-employed</td>
<td>unknown</td>
<td>unknown</td>
<td>4.3</td>
<td>2.8</td>
</tr>
<tr>
<td>Retired/Unemployed</td>
<td>unknown</td>
<td>unknown</td>
<td>5.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

Source: AOTA, 2006a; APTA, 2007d
### Appendix D
Demographic Data on Practitioners from 2006 and 2007 (con’t)

<table>
<thead>
<tr>
<th>Race/Ethnicity of practitioners</th>
<th>OT(%)</th>
<th>OTA(%)</th>
<th>PT(%)</th>
<th>PTA(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, Non-Hispanic</td>
<td>86.2</td>
<td>85.7</td>
<td>88.0</td>
<td>87.9</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.7</td>
<td>2.9</td>
<td>2.5</td>
<td>4.3</td>
</tr>
<tr>
<td>African-American or Black</td>
<td>1.6</td>
<td>0.8</td>
<td>2.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>5.0</td>
<td>2.0</td>
<td>5.5</td>
<td>1.8</td>
</tr>
<tr>
<td>Native American or Alaskan Native</td>
<td>0.1</td>
<td>0.4</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Multi-ethnic</td>
<td>1.2</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>1.5</td>
<td>1.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>4.2</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: AOTA, 2006a; APTA, 2007d

<table>
<thead>
<tr>
<th>Gender of practitioners</th>
<th>OT (%)</th>
<th>OTA (%)</th>
<th>PT (%)</th>
<th>PTA (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>95.7</td>
<td>97.1</td>
<td>65.3</td>
<td>78.5</td>
</tr>
<tr>
<td>Male</td>
<td>4.3</td>
<td>2.9</td>
<td>34.7</td>
<td>21.5</td>
</tr>
</tbody>
</table>

Source: AOTA, 2006a; APTA, 2007d