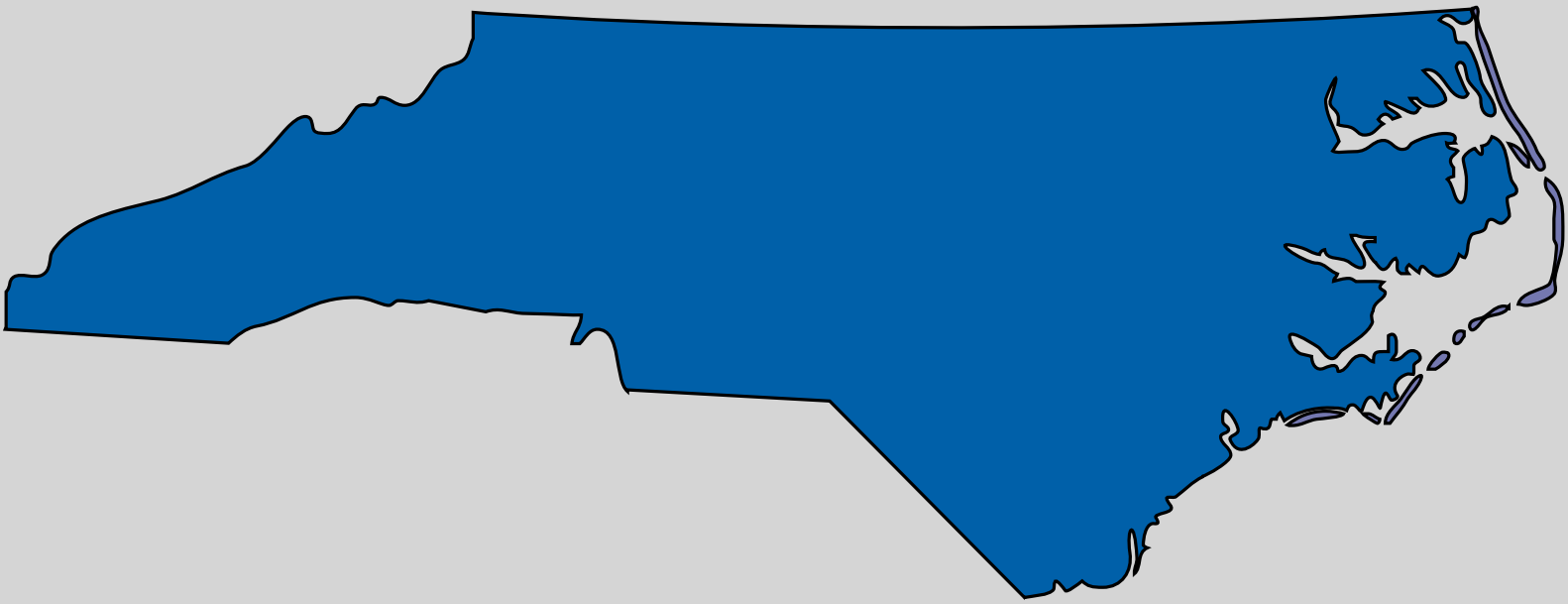
Communicating the Trends:
The Speech-Language Pathology Workforce in North Carolina

REPORT OF THE TECHNICAL PANEL ON THE SPEECH-LANGUAGE PATHOLOGY WORKFORCE



Presented to:
THE COUNCIL FOR ALLIED HEALTH IN NORTH CAROLINA

June 2001

The Speech-Language Pathology Workforce Assessment Project is a joint effort of:

The Cecil G. Sheps Center for Health Services Research, UNC-Chapel Hill
The Council for Allied Health in North Carolina
The North Carolina Area Health Education Centers Program

Suggested Citation: Council for Allied Health in North Carolina (2001). *Communicating the Trends: The Speech-Language Pathology Workforce in North Carolina.* Chapel Hill, NC.

Communicating the Trends:

The Speech-Language Pathology Workforce in North Carolina

JUNE 2001

Principal Authors
Erin P. Fraher, M.P.P.
Laura M. Smith, B.S.

North Carolina Speech-Language Pathology Workforce Assessment Technical Panel

Practitioners

Sandie Barrie Blackley, M.A., CCC-SLP
Speech-Language Pathologist
The Language and Learning Clinic
188 Claremont Drive
Elkin, NC 28621
(336) 835-8224
llclinic@aisnc.net

Beth Burns, M.S., CCC-SLP
Lead Speech-Language Pathologist
Chapel Hill-Carrboro City Schools
Carrboro Elementary School
400 Shelton Street
Carrboro, NC 27510
(919) 968-3652 x208
bburns@chccs.k12.nc.us

Jan Keel, A.B., A.A.S., SLPA
Speech-Language Pathology Assistant
408 Columbia Avenue
Carolina Beach, NC 28428
(910) 458-7507
jkeelslpa@cs.com

Employers

Lisa Pennington, M.Ed., CCC-SLP
Director of Rehabilitation Services
Alamance Regional Medical Center
P.O. Box 202
Burlington, NC 27216
(336) 538-7500
pennlisa@armc.com

Deborah V. Sterken, M.S., CCC-SLP
Area Rehab Director for
Eastern North Carolina
Vencare Rehabilitation Services
8808 Gotherstone Court
Raleigh, NC 27615
(919) 676-2504
debvsterk@aol.com

Educators

Jeanne Mullins, M.A., CCC-SLP
Lead Instructor, SLPA Program
Cape Fear Community College
411 North Front Street
Wilmington, NC 28401-3993
(910) 251-5906
jmullins@capefear.cc.nc.us

Mariana Newton, Ph.D., CCC-SLP
Professor Emeritus
University of North Carolina-Greensboro
701 Kemp Road West
Greensboro, NC 27410
(336) 292-4598
m_newton@uncg.edu

Workforce Planning Experts

Ann Colenda
Labor Market Information Division
Employment Security Commision
of North Carolina
700 Wade Avenue
Raleigh, NC 27611
(919) 733-2936
colenda.ann@esc.state.nc.us

Collaborators

Alan Brown, M.S.W.
Associate Director, NC AHEC Program
UNC-CH, CB# 7165
Chapel Hill, NC 27599-7165
(919) 966-0814
Alan_Brown@med.unc.edu

Thomas R. Konrad, Ph.D.
Cecil G. Sheps Center for Health
Services Research
UNC-CH, CB# 7590
725 Airport Rd.
Chapel Hill, NC 27599-7590
(919) 966-7636
bob_konrad@unc.edu

Robert Thorpe, Ed.D., RT
Associate Chair
Allied Health Sciences
UNC-CH, CB#7120
Chapel Hill, NC 27599-7120
(919) 966-2343
bthorpe@med.unc.edu

Staff to Panel

Erin Fraher, M.P.P.
Director
North Carolina Health
Professions Data System
Cecil G. Sheps Center for Health
Services Research
UNC-CH, CB #7590
725 Airport Rd.
Chapel Hill, NC 27599
(919) 966-5012
erin_fraher@unc.edu

Laura Smith, B.S.
Data Coordinator
North Carolina Health
Professions Data System
Cecil G. Sheps Center for Health
Services Research
UNC-CH, CB #7590
725 Airport Rd.
Chapel Hill, NC 27599
(919) 966-7112
smithl@schsr.unc.edu

North Carolina Speech-Language Pathology Workforce Assessment Advisory Group

Laurie Cochenour, M. Ed.
Consortium Coordinator, Administrator
Division of Speech and Hearing Sciences
UNC-CH, CB# 7190
Wing D Medical School
Chapel Hill, NC 27599-7190
(919) 966-0103

Linda Wortman Lowe, M.A., CCC-SLP
SLPA Program Director
Caldwell Community College
and Technical Institute
2855 Hickory Blvd
Hudson, NC 28638
(828) 726-2457

Carolyn Mayo, Ph.D., CCC-SLP
Director
NC Health Careers Access Program
UNC-CH, CB # 8010
301 Pittsboro Street
Chapel Hill, NC 27599-8010
(919) 966-2264

David C. Pillsbury
Director, Hearing & Speech
North Carolina Baptist Hospital
Medical Center Blvd
Winston-Salem, NC 27517
(336) 716-3103

Sarah Slater
Director
Research Information and Analysis Division
ASHA
10801 Rockville Pike
Rockville, MD 20852
(301) 897-0149

Kathy Thompson
Manager, Therapy Services
Wake Med Rehab
3000 New Bern Avenue
Raleigh, NC 27610
(919) 350-8861

Panel Staff: Carolyn Busse, Jean Cox, Katie Gaul, Jamie Green, Ann Howard, Tonya Jenkins, Erica Pirrung, Thomas Ricketts, Karen Johnson-Webb, and staff at the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill.

Acknowledgements: This report would not have been possible without the generous contribution of data, expertise, and advice from Sarah Slater at the American Speech-Hearing-Language Association, staff and Board members of the North Carolina Board of Examiners for Speech and Language Pathologists and Audiologists, and staff at the North Carolina Department of Public Instruction. The panel members would like to thank the North Carolina Area Health Education Centers, The Cecil G. Sheps Center for Health Services Research, and the Council for Allied Health in North Carolina for their vision for conducting this panel process. The study has been made possible by the financial support of the North Carolina Area Health Education Centers Program.

TABLE OF CONTENTS

North Carolina Speech-Language Pathology Workforce Assessment Technical Panel i
North Carolina Speech-Language Pathology Workforce Assessment Advisory Group i
List of Tables and Figures iii
Executive Summary iv
I. Introduction 1
A. The Allied Health Workforce Planning Process 1
B. Speech-Language Pathology Technical Panel: Scope of Work 1
II. Speech-Language Pathologists' Scope of Practice and Regulation 2
III. The Context: The Speech-Language Pathology Workforce in Transition 2
IV. National Trends in Speech-Language Pathology 3
A. The Vector Study 3
B. ASHA Data 4
V. The North Carolina Situation 5
A. Consumers of Speech-Language Pathology Services 5
1. Population Growth in North Carolina 5
2. Diversity 6
3. Individuals with Language/Learning Disorders 8
B. Providers of Speech-Language Pathology Services 8
1. Data Sources and Caveats 8
2. ASHA Data 9
3. The Department of Public Instruction 10
4. Board of Examiners Data 13
5. Data Merged from Board of Examiners and Department of Public Instruction 14
VI. Speech-Language Pathology Assistants 15
VII. Supply of Speech-Language Pathologists and Speech-Language Pathology Assistants from Educational Institutions 16
VIII. Conclusions and Recommendations 18
8.1 Supply and Education 18
8.2 Speech-Language Pathology Assistants 18
8.3 Distribution of Speech-Language Pathology Personnel 19
8.4 Diversity 19
8.5 Data Issues and Workforce Surveillance 20

LIST OF TABLES AND FIGURES

Tables

Table 1: Age 13 & Under and 65 & Over Population Growth North Carolina, 1991, 1995, 1999 5
Table 2: Breakdown of North Carolina Population by Race and Age Groups: 1990 and 1998 6
Table 3: Breakdown of Population by Age Groups: 1990 and 1998 6
Table 4: Practice Status Reported by North Carolina Speech-Language Pathologists Certified by ASHA* 2000 9
Table 5: SLPs Working in Public Schools by Age Group 11
Table 6: SLPs Working in the Public Schools by Degree 11
Table 7: Bachelor's Prepared SLPs Working in Public Schools by Age Group 11
Table 8: Speech-Language Pathologists by AHEC Region, 2000 14
Table 9: Speech-Language Pathologists by Health Professional Shortage Area (HPSA) Status, 2000 14
Table 10: Speech-Language Pathologists by Metropolitan and Nonmetropolitan Areas, 2000 14

Figures

Figure 1. Number of Speech Language Pathologists (SLPs) in the United States 1989-1999.....4
Figure 2. Population Growth Relative to 1979, United States and North Carolina, 1979-1998.....5
Figure 3. Percent Change in Population, 1989-1998 North Carolina.....5
Figure 4. Percent Hispanic Population, Children Ages 0-4 Years, North Carolina, 1998.....7
Figure 5. Percent Hispanic Population, Children Ages 5-19 Years, North Carolina 1998.....7
Figure 6. Number of Speech-Language Pathologists (SLPs), North Carolina, 1989-1999.....9
Figure 7. Annual Percent Change in the Number of Speech-Language Pathologists (SLPs), N.C. and U.S., 1989-1999.....9
Figure 8. Speech-Language Pathologists (SLPs) per 10,000 Population, U.S. and N.C., 1989-1999.....10
Figure 9. Active Speech-Language Pathologists (SLPs) Employed by the Department of Public Instruction (DPI) per 10,000 Enrolled Students, 2000.....10
Figure 10. Estimated Reduction in Department of Public Instruction (DPI) Workforce Due to Bachelor's Prepared Speech-Language Pathologists (SLP) not Seeking Master's Degrees, North Carolina, 2000.....12
Figure 11. Speech Language Pathologists (SLPs) Currently Employed by DPI: Age Group by Health Professional Shortage Area (HPSA) Designation, 2000.....12
Figure 12. Percent of Speech Language Pathologists (SLPs) Currently Employed by the NC Department of Public Instruction (DPI) that are Bachelor's Prepared, by Year of Hire 13
Figure 13. Speech-Language Pathologists (SLPs) per 10,000 Population and Location of Educational Programs, 2000.....14
Figure 14. Graduating class size and expected additions to speech-language pathologist workforce from in-state educational institutions: North Carolina, 1996-2005.....16
Figure 15. Graduating class size and expected additions to speech-language pathology assistant workforce from in-state educational institutions: North Carolina 1998-2005..... 17

EXECUTIVE SUMMARY

Background

In March of 1999, the Cecil G. Sheps Center for Health Services Research at UNC-CH (Sheps Center) presented a proposal to the North Carolina Area Health Education Centers (NC AHEC) Program and the Council for Allied Health in North Carolina (Council) to establish advisory panels that would examine the North Carolina allied health workforce. The purpose of the proposed panel process was to review the best available statistical and administrative data, to discuss existing and emerging policies, and to construct a consensus statement on the need for, and supply of, allied health professionals in selected disciplines in North Carolina. The process was designed to take place under the joint guidance of representatives of the Sheps Center, the Council, and the NC AHEC. The process envisioned a series of panels comprised of stakeholders including practitioners, employers, educators, and workforce planning experts for each allied health profession. Physical therapy was chosen as the first profession and that analysis has been completed.[1] Speech-language pathology was the second profession selected by the Council for study, and this report details the findings of The Technical Panel on Speech-Language Pathology Workforce.

The Technical Panel on the Speech-Language Pathology Workforce met on August 18, 2000 and January 25, 2001. The panel's task was to assess the employment prospects for speech-language pathologists (SLPs) and speech-language pathology assistants (SLPAs) in North Carolina. Panel deliberations focused on the following key workforce issues:

- *What is the overall balance between supply and need for speech-language pathologists and speech-language pathology assistants, and how is it likely to change given current trends?*
- *Are some areas of the state or population groups more prone to experience certain kinds of labor imbalances such as staffing shortages, recruitment and retention difficulties, or underemployment?*
- *Are minorities and individuals who speak a language other than English underrepresented in the speech-language pathology profession?*
- *Are we producing too many, too few, or about the right number of speech-language pathologists and speech-language pathology assistants in North Carolina to meet current and future requirements?*
- *Are reliable data available to address the preceding questions?*

For the 10-year period from 1996 to 2006, the Employment Security Commission (ESC) of North Carolina has predicted that speech-language pathology will be one of the fastest growing occupations in the state. Despite these predictions, many individuals familiar with the speech-language pathology workforce feel that this strong growth may not be realized due to changes in the way speech-language pathologists are reimbursed, and changes in federal health insurance programs. Anecdotal reports of cutbacks in hours and employment for speech-language pathologists have become widespread since the phase-in of changes to the Medicare program in the long-term care and rehabilitation systems required by the Balanced Budget Act (BBA) of 1997. On November 9, 1999, Congress passed the Balanced Budget Refinement Act (BBRA) that mandated a moratorium on the $1,500 Medicare Part B payment cap on out-patient speech-language pathology services that had been implemented by the Health Care Financing Administration (HCFA) under the BBA of 1997. The initial moratorium period mandated by the BBRA was from January 1, 2000-December 31, 2001. However, in February 2001, HCFA extended the moratorium from January 1, 2002-December 21, 2002. Uncertainty about future reimbursement policies for speech-language pathology services makes it a difficult, but important, time to analyze the speech-language pathology workforce.

In addition to reimbursement issues, two other factors are likely to affect the demand for speech-language pathology services in the short to medium term. The first is the recent introduction of the speech-language pathology assistant role. The first SLPAs in North Carolina graduated in 1999 and have just entered the labor market. The second factor relates to the recent court decision that ended the provisional hiring of bachelor's-level SLPs by the schools and affirmed the existing standard in the licensure law that all SLPs must have a minimum credential of a Master's degree.

Ascertaining the employment situation of SLPs and SLPAs working in North Carolina has been complicated by the absence of a reliable and rigorous data source. No single entity oversees speech-language pathologists working in the state. SLPs working in the public schools are exempted from licensure with the North Carolina Board of Examiners of Speech-Language Pathologists and Audiologists (Board of Examiners) and are overseen by the North Carolina Department of Public Instruction (DPI). Because SLPAs are such a recent addition to the North Carolina workforce, little data on the profession were available.

[1]The physical therapy report, "Maintaining Balance: The Physical Therapy Workforce in North Carolina in the Year 2000" is available at www.shepscenter.unc.edu/hp.

Conclusions and Recommendations

Based on the data analyzed by the panel and presented at length in this report, the panel makes the following recommendations:

8.1 Supply and Education

Conclusion: The data illustrated in this report suggest that the overall supply of, and demand for, SLPs and SLPAs seem to be in balance at this time. An excess supply of practitioners does not exist, nor is it likely to occur in the near term given the continuation of current trends in the North Carolina workforce and educational system. The situation does bear continued monitoring however, because although the traditional signposts of shortage in the overall market (high vacancy rates, rising salaries) are not present, shortages in specific subsets of the workforce are reported.

8.1.1 Recommendation: *Maintain the status quo with respect to the number of programs and the size of enrollments in SLP and SLPA educational programs.*

Conclusion: Although the supply of SLPs in clinical service delivery seems to be in balance at present, availability of faculty to teach in SLP programs is an increasing problem. Too few doctoral students have graduated in the past twenty years to fill vacancies left by an increasing number of retirees. Hence, the ability of the existing educational programs to hire enough faculty to teach current and future students is in jeopardy.

8.1.2 Recommendation: *Develop educational policy (e.g. space, funding) to ensure an adequate supply of doctoral-level faculty for the six currently existing programs in North Carolina offering the master's degree in speech-language pathology.*

Conclusion: The estimated attrition of about 13% of the DPI workforce due to bachelor's-prepared SLPs not upgrading to the master's degree is cause for concern. Case loads in the schools vary substantially across systems and the counties projected to be hardest hit by this attrition already have lower than average numbers of SLPs per enrolled population. The potential loss of bachelor's-prepared SLPs from the schools will likely exacerbate existing geographic disparities. Currently, only five SLPAs are employed by DPI, and are therefore underutilized as a mechanism for addressing caseload variations. Concerns about the current and future supply of SLPs in the schools fuel existing professional debates about the relationship between high case loads and student outcomes. To this end, panel members acknowledge a need for the profession to advocate for inclusion in SLP and SLPA education program curriculum (both degree and continuing education) the knowledge and skills for self-advocacy, consistent with codes of professional ethics, to assist practitioners in defining maximum case loads. These professional efforts, combined with attrition of bachelor's-prepared SLPs from the schools, could result in a shortage of SLPs employed by DPI.

8.1.3 Recommendations: *Increase efforts to develop mechanisms to assist DPI-employed clinicians without masters' degrees who desire to continue in the profession, and have appropriate credentials for admission, to obtain a master's degree. Efforts should be focused particularly on counties that have low SLP-per-population ratios. Such mechanisms may include, but are not limited to, scholarships, leaves of absence for full-time study, availability of down-link sites within 50 miles of clinicians' residences, and/or loans forgiven for years of service to schools in underserved areas.*

8.1.4 Recommendation: *Encourage the training of DPI-employed SLPs in the supervision of SLPAs and advocate for the utilization of SLPAs in schools.*

8.2 Speech-Language Pathology Assistants

Conclusion: The data suggest that speech-language pathology assistants are underutilized in the state. Contributing to this underutilization is the fact that SLPAs are a newly authorized care provider in N.C. and their role is currently being defined by the profession and by the market. Many of the underlying causes of their lack of employment appear to be related to issues that are being addressed by both state and national entities (i.e., Medicaid reimbursement, establishment of mechanisms to facilitate reciprocity of registration across states, etc.). The panel makes the following recommendations with respect to education efforts:

8.2.1 Recommendation: *Educational policymakers should avoid downsizing or closing programs in response to attrition from educational programs, declines in applicant pools, or lack of employment opportunities post-graduation. Time is needed to monitor the evolving SLPA role. Programs experiencing difficulties should receive continued support for a minimum of three to five years so local, state, and national trends can be observed and interpreted.*

8.2.2 Recommendation: *Disseminate more information to SLPs and their employers about the role, capabilities, utility, and value of the SLPA. ASHA's new job analysis of the SLPA role, conducted by the Educational Testing Service and based extensively on an analysis commissioned by the North Carolina Board of Examiners, is an appropriate foundation for these educational efforts.*

8.2.3 Recommendation: *Design and obtain funding for programs aimed at helping SLPs develop the skills needed to supervise SLPAs.*

Conclusion: Ongoing monitoring of the impact of the emerging SLPA role is necessary. Barriers to employment that are amenable to action should be identified. Emphasis should also be placed on observing and documenting the extent to which SLPAs are extending the effectiveness of SLPs, enabling clinical services to be introduced to new populations, and increasing the intensity and quality of services received by existing clienteles.

8.2.4 Recommendation: *Collect data including, but not limited to, the type of clinical setting, type of employer, and location(s) of communities where SLPs and SLPAs work in a uniform and coordinated way, so that their joint and separate contributions to expanding the volume and quality of services provided and access to those services can be documented effectively.*

8.2.5 Recommendation: *Conduct a focused pilot study on the utilization of SLPAs by SLPs in the assessment and management of dysphagia.*

8.3 Distribution of Speech-Language Pathology Personnel

Conclusion: The overall supply of SLPs and SLPAs is close to national ratios. However, supply is higher in metropolitan areas than the national average, and is substantially below the national ratios in nonmetropolitan and traditionally underserved health professional shortage areas. The state's urban areas may have reached a saturation point, but there is room for expansion of employment opportunities in other geographic areas and through the development of new roles for SLPs and SLPAs.

8.3.1 Recommendation: *Continue to assess trends in geographic disparities and augment this information with a more focused assessment of the nature and extent of employment opportunities for graduates that are available in nonmetropolitan and health professional shortage areas.*

8.3.2 Recommendation: *Consider state-funded financial incentives for employment in underserved health professional shortage areas, such as forgiving student loans for years of service to schools in underserved areas.*

8.4 Diversity

Conclusion: The problem of underrepresentation of minorities (especially racial, ethnic, and language minorities) in the health professions is a long-standing one and is by no means limited to the speech-language pathology workforce. Despite a steady growth in numbers, the diversity of the speech-language pathology workforce does not match that of North Carolina's current or future population. Also at issue is the disparity in the balance of men and women in the speech-language pathology workforce. Developing effective strategies that encourage workforce diversity requires continued monitoring of the current workforce as well as the pool of potential new SLPs and SLPAs being educated in North Carolina programs.

8.4.1 Recommendation: *Develop an effective strategy to collect and analyze application, admission, matriculation, graduation, certification/licensure, and initial employment data from both SLP and SLPA education programs in North Carolina, including demographic data on race, ethnicity, linguistic competence, and gender.*

8.4.2 Recommendation: *Enlarge and develop the applicant pool in both educational and employment settings by effectively promoting the speech-language pathology profession to persons who are from racial/ethnic groups that have historically been underrepresented in the profession (i.e. African-Americans, Native Americans, Hispanics and Asian-Pacific Islanders of the Vietnam era). The recruitment of males and people who are competent in more than one language is equally important. Effective recruitment strategies should also include mechanisms for communicating employment opportunities (unfilled positions) to all SLP and SLPA educational programs in NC.*

8.4.3 Recommendation: *Assess and disseminate information about the success of minority recruitment and retention efforts in colleges, universities and other post-secondary institutions that have high minority enrollment.*

8.4.4 Recommendation: *Monitor shifts in affirmative action policies affecting the health professions at a national and state level.*

8.4.5 Recommendation: *Collect better information through licensure (Board of Examiners) and credentialing (DPI) processes on the ethnic/racial diversity, gender, and language capabilities of speech-language pathology professionals.*

Conclusion: The increase in the number of individuals who speak a language other than English in North Carolina poses a unique challenge for the speech-language pathology profession, since speech and communication form the foundation of the profession.

The need exists for increased numbers of SLPs and SLPAs who are not only competent in English, but also in other languages and who are, at least, culturally sensitive, and, at best, culturally competent[2,3].

8.4.6 Recommendation: *Develop courses and/or modules to enable currently enrolled students, as well as actively practicing professionals, to gain the skills necessary to work with North Carolina's linguistically and culturally diverse population.*

8.4.7 Recommendation: *Develop an inventory of the linguistic capabilities of practicing professionals so that there is a pool of practitioners who can assist their colleagues with language barriers. This inventory could be disseminated by publishing the language abilities of SLPs and SLPAs in the annual directory of the Board of Examiners.*

8.5 Data Issues and Workforce Surveillance

Conclusion: The panel acknowledges that currently existing data on the speech-language pathology workforce are insufficient to effectively monitor workforce trends. A complete database that is inclusive of all SLPs and SLPAs in the state's workforce would enable all stakeholders to better distinguish between short-term fluctuations in demand occasioned by changes in employment levels or reimbursement policies from underlying long-term trends that require more deliberate and coordinated efforts.

8.5.1 Recommendation: *Require all SLPs in North Carolina to be licensed by the Board of Examiners. This would ensure that all SLPs (those licensed by the Board of Examiners and those currently credentialed by the school system) could be monitored through one organization.*

8.5.2 Recommendation: *Until all SLPs are required to be licensed by the Board of Examiners, obtain agreement between the Board of Examiners and DPI on the data elements needed in a minimum data set to be collected on both the re-licensure survey of the Board of Examiners and recertification survey of the DPI.*

8.5.3 Recommendation: *The minimum data set should include, among other data elements, practice location, specialty, employment setting, activity status (i.e. active practice, retired, etc.), number of practice hours per week, location and name of training program, age, race, ethnicity, gender, and language competencies.*

8.5.4 Recommendation: *Seek the resources necessary to routinely computerize critical pieces of data. Establish data analysis mechanisms through the Board of Examiners that are reimbursable at a fee at least sufficient to cover costs.*

Conclusion: Better data collection will improve educational program planning and enhance the ability of all stakeholders in the speech-language pathology community to address diversity issues, geographic disparities, and other workforce challenges. Tabulation and dissemination of this information will help stakeholders to identify imbalances and fine-tune policy decisions in a more timely and objective manner. As objective data are accumulated, ongoing analyses of trends might minimize the tendency for entities to react prematurely or unilaterally to transient events.

8.5.5 Recommendation: *Establish ongoing liaisons with the American-Speech-Language-Hearing Association (ASHA) to identify a common data set, and develop data collection mechanisms and vehicles for sharing data between North Carolina and other states.*

8.5.6 Recommendation: *Monitor geographic trends in supply including county-level ratios, underrepresentation of minorities, urban versus rural differences, and AHEC regions.*

8.5.7 Recommendation: *Continue periodic reevaluation of workforce needs relative to demographic changes and population needs.*

[2]Cultural competence is defined in this report as the set of behaviors, attitudes, and policies that come together in an institution, agency, or among a group of individuals, that allows them to work effectively in cross-cultural situations;
[3]The definition of cultural competence used in this document is drawn from a publication entitled *Quality Health Services for Hispanics: The Cultural Competency Component* published by the Bureau of Primary Health Care, of the Health Resources and Services Administration of the United States Department of Health and Human Services. This work, in turn, draws heavily on work by Cross, TL et al in "The Cultural Competency Continuum" Toward a Culturally Competent System of Care: A Monograph on Effective Services for Minority Children Who Are Severely Emotionally Disturbed. Washington, D.C.: Child and Adolescent Service System Program (CASSP), Technical Assistance Center, Center for Health and Mental Health Policy, Georgetown University Child Development Center, 1989.

INTRODUCTION

A. The Allied Health Workforce Planning Process

In March of 1999, the Cecil G. Sheps Center for Health Services Research at UNC-CH (Sheps Center) presented a proposal to the North Carolina Area Health Education Centers (NC AHEC) Program and the Council for Allied Health in North Carolina (Council) to establish advisory panels that would examine the North Carolina allied health workforce. The purpose of the proposed panel process was to review the best available statistical and administrative data, to discuss existing and emerging policies, and to construct a consensus statement on the need for, and supply of, allied health professionals in selected disciplines in North Carolina. The process was designed to take place under the joint guidance of representatives of the Sheps Center, the Council, and the NC AHEC. The process envisioned a series of panels composed of representatives from various stakeholder groups. Stakeholders would include practitioners from the allied health professions, as well as employers, educators, and workforce planning experts. Panels would be constructed to address the specific situation of different allied health professions over an extended time period. The NC AHEC and the Council approved the proposal on April 27, 1999. Subsequently, members of the Council debated professions to be studied over the next three years. Physical therapy was chosen as the first profession and that analysis has been completed[3]. Speech-language pathology was the second profession selected by the Council for study, and this report details the findings of The Technical Panel on the Speech-Language Pathology Workforce.

B. Speech-Language Pathology Technical Panel: Scope of Work

The Technical Panel on the Speech-Language Pathology Workforce, a group consisting of educators, practitioners, employers, and workforce experts, met on August 18, 2000 and January 25, 2001. The panel's task was to assess the employment prospects for speech-language pathologists (SLPs) and speech-language pathology assistants (SLPAs) in North Carolina. Panel deliberations focused on the following key workforce issues:

- *What is the overall balance between supply and need for speech-language pathologists and speech-language pathology assistants, and how is it likely to change given current trends?*
- *Are some areas of the state or population groups more prone to experience certain kinds of labor imbalances such as staffing shortages, recruitment and retention difficulties, or underemployment?*
- *Are minorities and individuals who speak a language other than English underrepresented in the speech-language pathology profession?*
- *Are we producing too many, too few, or about the right number of speech-language pathologists and speech-language pathology assistants in North Carolina to meet current and future requirements?*
- *Are reliable data available to address the preceding questions?*

The best available data to help answer these questions were compiled and analyzed by staff at the Cecil G. Sheps Center for Health Services Research at UNC-Chapel Hill. The panel relied on these data, their own expertise, and that of staff to develop a consensus statement on the current and future balance between the supply and need for speech-language pathologists and speech-language pathology assistants in North Carolina.

The remainder of this report examines national trends in the speech-language pathology workforce, provides background on the North Carolina situation, describes the information and data sources the panel used, summarizes the panel's findings and conclusions, and reports the panel's recommendations.

[3]The physical therapy report, "Maintaining Balance: The Physical Therapy Workforce in North Carolina in the Year 2000" is available at www.shepscenter.unc.edu/htp.

I. SPEECH-LANGUAGE PATHOLOGISTS' SCOPE OF PRACTICE AND REGULATION

The speech-language pathology profession focuses on the assessment, treatment, and prevention of speech, language, cognitive communication, voice, swallowing, fluency, and other related disorders. Speech-language pathology professionals work with persons who have developmental or acquired disorders of language; persons who cannot articulate speech sounds correctly or have other speech motor impairments (e.g. fluency, stuttering); persons with hypernasality (e.g. cleft palate); persons with voice disorders; and individuals with cognitive linguistic impairments, such as deficits in attention, memory, and problem-solving. They may also work with persons who have oral motor problems as the underlying cause of speech, eating, and swallowing disorders.

The American Speech-Language-Hearing Association (ASHA) is the national professional, scientific, and credentialing association for speech-language pathologists and audiologists. Certification with ASHA facilitates portability across states, and although ASHA's certification process parallels state licensure requirements, most states also require licensure. Speech-language pathologists are regulated in 44 states; Colorado, Alaska, Idaho, Michigan, South Dakota, and Vermont do not regulate the profession. Regulation can take three forms: licensure, certification, and registration. Licensure is required in 42 states. In Minnesota licensure is not required for practicing the profession, but SLPs who want to use the protected title must be registered and meet state requirements. Washington regulates SLPs via certification (similar to registration) which is voluntary and is not required for practice. Ten states require all speech-language pathologists to be licensed regardless of employment setting. In North Carolina, the practice act exempts from licensure SLPs who are salaried employees of, and credentialed by, the public schools, as well as those who are salaried federal employees[4].

For the 10-year period from 1996 to 2006, the Employment Security Commission (ESC) of North Carolina has predicted that speech-language pathology will be one of the fastest growing occupations in the state. Despite these predictions, many individuals familiar with the speech-language pathology workforce feel that this strong growth may not be realized due to changes in the way speech-language pathologists are reimbursed and changes in federal health insurance programs.

III. THE CONTEXT: THE SPEECH-LANGUAGE PATHOLOGY WORKFORCE IN TRANSITION

For the 10-year period from 1996 to 2006, the Employment Security Commission (ESC) of North Carolina has predicted that speech-language pathology will be one of the fastest growing occupations in the state. The Commission predicts that there will be a total of 2,050 openings in North Carolina over the 10-year period that, if filled, would represent an 85% increase in supply. This growth rate translates into an average yearly increase of about 240 job openings. Despite these predictions, many individuals familiar with the speech-language pathology workforce feel that this strong growth may not be realized due to changes in the way speech-language pathologists are reimbursed and changes in federal health insurance programs. Anecdotal reports of cutbacks in hours and employment for speech-language pathologists have become widespread since the phase-in of changes to the Medicare program in the long-term care and rehabilitation systems required by the Balanced Budget Act (BBA) of 1997. Because private insurers often follow Medicare's lead in coverage limitations and service exclusions, the BBA provisions may have wider implications for financing speech-language pathology and other rehabilitation services.

More recent developments may also affect the outlook for speech-language pathology nationwide. On November 9, 1999, Congress passed the Balanced Budget Refinement Act (BBRA) that mandated a moratorium on the $1,500 Medicare Part B payment cap on out-patient speech-language pathology services that had been implemented by the Health Care Financing Administration (HCFA) under the BBA of 1997. The initial moratorium period mandated by the BBRA was from January 1, 2000 - December 31, 2001. However, in February 2001, HCFA extended the moratorium from January 1, 2002 - December 21, 2002.

[4]Others exempted from the licensure act include graduate students enrolled in accredited training programs, physicians, and persons performing audiometric screenings under the supervision of a licensed physician or licensed audiologist.

Uncertainty about future reimbursement policies for speech-language pathology services makes it a difficult time to analyze the speech-language pathology workforce. The possibility that the moratorium on the Medicare caps will be rescinded or another equally restrictive payment system put in place raises the prospect of a decrease in demand for speech-language pathology services, and provides an important context in which to focus attention on the SLP and SLPA workforce. It is also possible that salary reductions driven by national reimbursement policies may reverberate through local employers and lead to underemployment or unemployment of speech-language pathology personnel.

Other factors may significantly affect the supply and demand of speech-language pathology services in North Carolina. As health care delivery becomes a global enterprise, both profit and nonprofit organizations are making health care available to people in developing and transitional countries in Africa, Asia and Latin America. Globalization of the employment market is likely to increase employment opportunities for speech-language pathologists and speech-language pathology assistants outside the United States and is expected to affect the supply and demand scenario in the long run.

Interest at the national level in evaluating the effectiveness of speech-language pathology interventions has also been emerging. In 1993, the American Speech-Language-Hearing Association established the Task Force on Treatment Outcomes and Cost Effectiveness and created a national outcomes database for speech-language pathologists. In 1997, the National Center for Treatment Effectiveness in Communication Disorders took over this role. ASHA hopes that this effort will help to increase opportunities for reimbursement and third-party coverage, improve the quality of client care, and increase the perceived value of speech-language pathology in the marketplace.

At the state level, two factors are likely to affect the demand for speech-language pathology services in the short to medium term. The first is the recent introduction of the speech-language pathology assistant role. The first SLPAs in North Carolina graduated in 1999 and have just entered the labor market. The second factor relates to the recent court decision that ended the provisional hiring of bachelor's-level SLPS by the schools and affirmed the existing standard in the licensure law that all SLPs must have a minimum credential of a Master's degree.

At the state level, two additional factors are likely to affect the demand for speech-language pathology services in the short to medium term. The first is the recent introduction of the speech-language pathology assistant role. The first SLPAs in North Carolina graduated in 1999 and have just entered the labor market. The second factor relates to the recent court decision that ended the provisional hiring of bachelor's-level SLPS by the schools and affirmed the existing standard in the licensure law that all SLPs must have a minimum credential of a Master's degree[5]. These reimbursement, globalization, research, paraprofessional, judicial, and regulatory factors provide an important context in which to study the speech-language pathology workforce in the state.

IV. National Trends in Speech-Language Pathology

A. The Vector Study

In 1999, Vector Research Inc. was commissioned by ASHA to examine the employment prospects of speech-language pathologists through the year 2020[6]. This analysis projected that the supply of SLPs nationally was increasing faster than demand and that "the short term outlook for careers in audiology and speech-language pathology is not nearly as positive as it was ten years ago."

The focus of the Vector study was on SLPs who were either ASHA-certified or held a master's or Ph.D. in communication sciences and disorders, and were in active practice. Bachelor's level SLPs were excluded from the analysis. Vector's supply projections accounted for United States and international new entrants, deaths, retirements, career changes, and part-time labor force participation. The demand forecasts used age-, sex-, and insurance-adjusted per capita staffing models that reflect the current population-centered health care planning paradigm. The model also incorporated factors such as the aging of the population, long-term economic growth, displacement of SLPs by SLPAs, changes in Medicare reimbursement policies, increased penetration of the HMO market, and competition from other health care providers (i.e. occupational therapists).

[5] 468 S.E. 2d 826 (N.C. App 1996)
[6] The Vector study did not include speech-language pathology assistants.

The Vector study estimated that about 80% of the SLP workforce is ASHA certified. The report concluded that in 1997 there was a shortage of SLPs caused by an increase in well-compensated employment in residential health care settings. These jobs diminished in number with the introduction of the BBA of 1997, and many SLPs moved into other employment settings such as the schools. The report suggests that the employment situation is one in relative balance, but that the future is uncertain. It asserts that "[s]upply and demand projections show unambiguously that the supply of SLPs is growing faster than demand." The Vector Study projects that new entrants into the field will average about 5,600 graduates per year, will peak around 2010 and then decline. If these projections are accurate, a surplus of SLPs on the order of 23% will exist by 2010. Under this scenario, speech-language pathologists will still be able to find employment in the next few years, but not in their most preferred employment setting or geographic location.

Demand will not increase equally across all settings; Vector predicts the highest growth rates will be in residential health care settings and hospitals. However, if the moratorium on the Medicare caps is subsequently lifted, or if new cost containment policies are put in place, the applicability of this scenario may change. Technology is expected to have a negligible effect on demand.

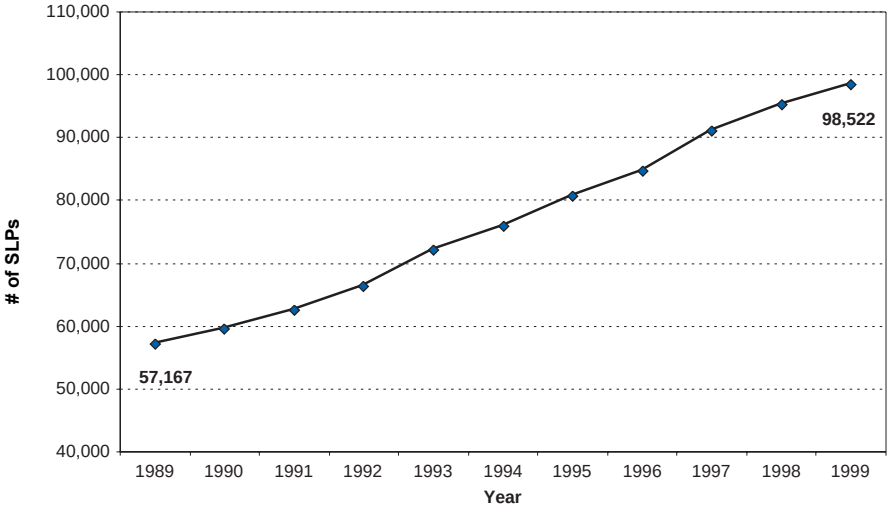
B. ASHA Data

Longitudinal data from ASHA indicate that the number of speech-language pathologists in the United States has grown steadily over the past 10 years (**Figure 1**). In 1989, there were 57,167 SLPs in the United States. Between 1989 and 1999, 41,000 new providers entered the market and by 1999 there were 98,522 speech-language pathologists in the United States[7].

The American Speech-Language-Hearing Association conducts an Omnibus survey of its members every one to two years that provides important trend and demographic information about the profession[8]. The 1999 results show that the majority of SLPs are female (96%) and white (95%). The average age of SLPs is 41; attrition from the workforce due to retirement is not likely to be a problem in the short to medium term. About half of all SLPs (54.2%) are employed in an educational facility, 16% in hospitals, 10% in residential health care facilities, 14% in nonresidential health care facilities, and the remainder in other agency, research, and governmental organizations.

According to results from the most recent survey, Medicare reform efforts may already be affecting the SLP workforce. More than half of respondents to the 1999 survey reported some type of undesired change in their employment situation in the previous 12 months. Twenty-four percent of respondents experienced an increase in caseload, 18% saw a decline in salary or benefits, 15% had a reduction in work hours, and another 15% reported an increase in the number of sites they serve. The survey reported that 67% of respondents work full-time, 23% part-time, and 2.1% were unemployed and actively seeking employment in 1999.

Figure 1.
Number of Speech-Language Pathologists (SLPs), United States 1989-1999



Source: American Speech-Language-Hearing Association

Note: Data were adjusted upward to reflect the fact that approximately 80% of SLPs are ASHA members. Data include individuals who have dual certification as an audiologist.

[7]Data reported from ASHA in this report were adjusted upward to reflect the fact that approximately 80% of SLPs are AHSA members. The data include individuals who hold dual certification as an audiologist.
[8]The Omnibus survey uses a stratified, probability (non-replacement) sampling methodology. In 1999, 6,950 members were sent surveys; the response rate was 56% (n=3,910).

V. THE NORTH CAROLINA SITUATION

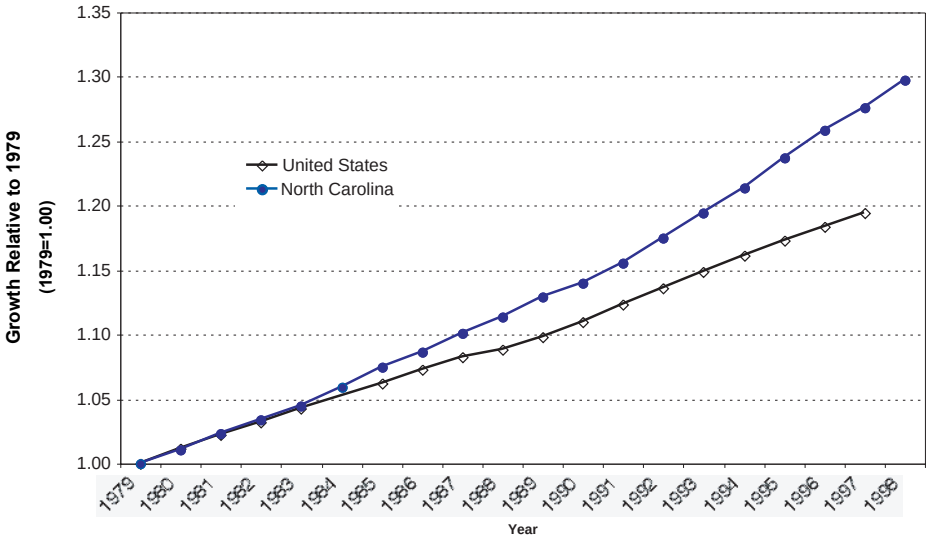
A. Consumers of Speech-Language Pathology Services

1. Population Growth in North Carolina

North Carolina's population has grown dramatically over the last twenty years[9]. While the overall population of the United States has increased by about 20% since 1979, North Carolina's population has increased by almost 30% (**Figure 2**).

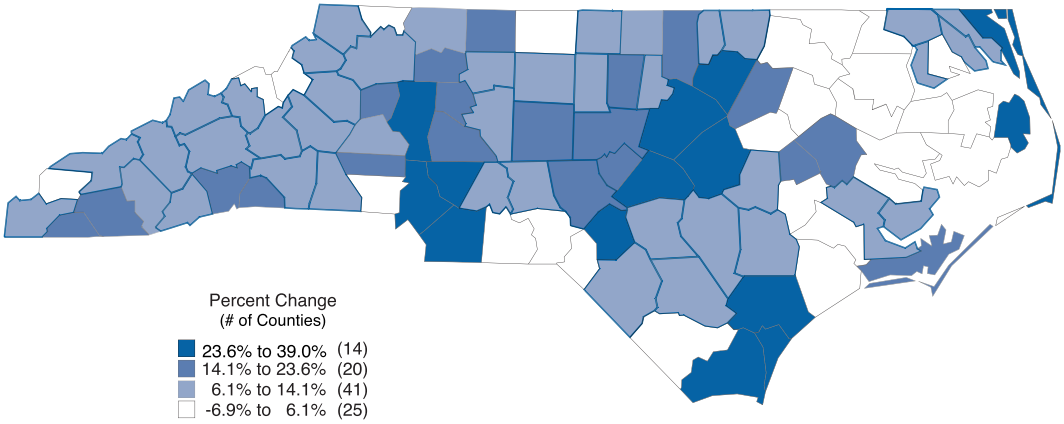
The population has grown fastest in the urbanized counties that form an arc linking Raleigh, Durham, Greensboro, Winston-Salem, and Charlotte with the other urban areas of Asheville, Fayetteville, and Wilmington experiencing similar growth.

Figure 2.
Population Growth Relative to 1979,
United States and North Carolina, 1979-1998



Sources: U.S. Bureau of the Census
North Carolina Office of State Planning

Figure 3.
Percent Change in Population, 1989-1998
North Carolina



Source: North Carolina Office of State Planning, 1998.

Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill

Some rural counties, generally those on the coast or in the mountains with recreational or retirement potential, also have experienced a substantial population expansion (**Figures 3**).

The 13 & under and 65 & over populations are key consumers of speech-language pathology services and both these age groups have experienced population increases in the past decade (**Table 1**).

Table 1: 13 & Under and 65 & Over Population Growth for North Carolina, 1991, 1995, 1999

Year	13 & Under Population	65 & Over Population	Total N.C. Population
1991	1,286,844	823,259	6,748,027
1995	1,378,238	900,321	7,185,327
1999	1,461,218	981,585	7,650,700
Increase from 1991-1999	174,374	158,326	902,673

Source: U.S. Census Bureau, Population Division, Administrative Records and Methodology Research

[9]The recent release of the aggregate state population numbers from the Census 2000 indicate that the data used in this report may underestimate the true size of the North Carolina population.

Any examination of the changes in the supply and distribution of the health care workforce must take into account North Carolina's rapid population growth, as well as the differences in growth rates across counties of the state. To account for these factors, changes in the supply of speech-language pathology professionals are illustrated in this report for the state and the nation by examining their number per 10,000 people per year. This practitioner per 10,000 ratio provides a better mechanism to compare the supply and distribution of speech-language pathology professionals across varying geographic areas than would simple raw counts.

2. Diversity

A key issue for the speech-language pathology profession to examine is the extent to which professionals mirror the increasing racial, ethnic, and linguistic diversity of North Carolina's citizens. In 1998, minorities made up a little over a quarter (26.5%) of the total North Carolina population. More striking is that while about one-quarter (23.9%) of the 20 & over population is minority, a third of school age (5-19) and preschool age (0-4) children are minorities (**Table 2**).

Table 2: Breakdown of North Carolina Population by Race and Age Groups: 1990 and 1998

	1990			1998		
	0-4	5-19	20 & over	0-4	5-19	20 & over
White Non-Hispanic (%)	67.8%	68.5%	77.5%	67.8%	66.5%	76.1%
White Hispanic (%)	1.5%	1.1%	0.8%	3.5%	2.5%	1.5%
Black (%)	28.1%	27.8%	19.8%	25.0%	27.7%	20.1%
Asian Pacific Islander (%)	1.0%	1.0%	0.7%	2.1%	1.5%	1.2%
American Indian, Eskimo, Aleut (%)	1.5%	1.7%	1.1%	1.6%	1.7%	1.1%
Total (%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Population (Number)	473,334	1,379,071	4,804,604	527,045	1,598,354	5,421,094

Source: U.S. Census Bureau, Population Division, Administrative Records, and Methodology Research

Traditionally, most Hispanic newcomers to the United States have settled in Texas, New Mexico, Arizona, and California. However, North Carolina has become an emerging magnet for Hispanics[10]. Between 1990 and 1998, the Hispanic population in North Carolina increased by about 50%--from 77,480 individuals in 1990 to 161,223 in 1998. This growth rate is even more telling when broken down by age group (**Table 3**); the fastest growing segment of the Hispanic population is school-age and preschool-age children.

Table 3: Breakdown of Population by Age Groups: 1990 and 1998

	0-4		5-19		20 & over	
	1990	1998	1990	1998	1990	1998
White Non-Hispanic (%)	67.8%	67.8%	68.5%	66.5%	77.5%	76.1%
Hispanic: White & Other Race	**1.9%**	**4.1%**	**1.4%**	**3.0%**	**1.0%**	**1.7%**
Non-White Non-Hispanic (%)	30.2%	28.2%	30.1%	30.5%	21.4%	22.2%
Total (%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Population (Number)	473,334	527,045	1,379,071	1,598,354	4,804,604	5,421,094

Source: U.S. Census Bureau, Population Division, Administrative Records and Methodology Research

A recent survey of local health departments, community, rural and migrant health centers, and rural hospitals conducted by the North Carolina Center for Public Policy Research identified that the primary barrier to Hispanics receiving health care in North Carolina is the language barrier[11]. A key challenge for the SLP workforce in North Carolina will be to increase its numbers of practitioners who can provide services in a language other than English.

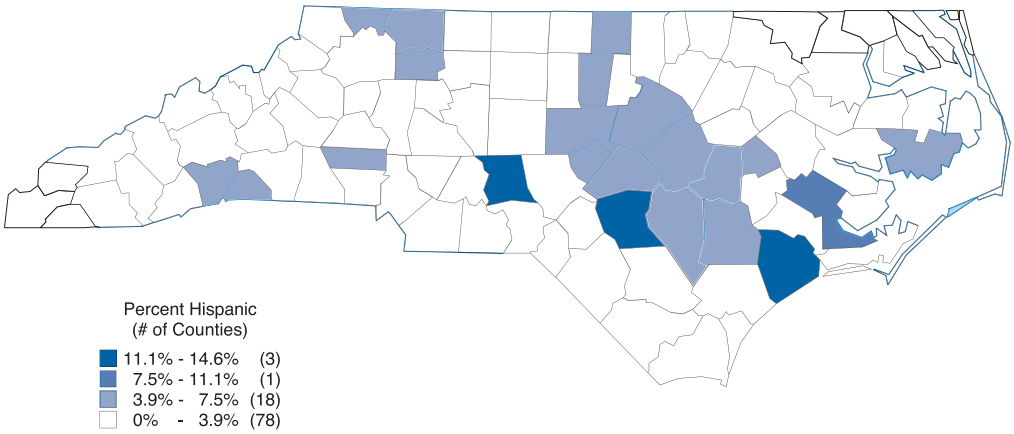
It is estimated that between 7-9% of school age children require speech-language services[12]. In the decade between the 1988-1989 and 1998-1999 school years, the number of students eligible for services for speech-language impairments increased by more than 20%--from 29,878 to 36,271[13].

[10] Johnson, James H., Karen D. Johnson Webb and Walter C. Farrell, Jr., "A Profile of Hispanic Newcomers to North Carolina," *Popular Government*, Fall 1999.
[11] "Growing Hispanic Population Has Unique Health Care Needs," *North Carolina Insight*, August 1999.
[12] Personal communication with panel member Beth Burns, Lead SLP, Chapel Hill/ Carrboro schools.
[13] North Carolina Department of Public Instruction

The speech-language pathology profession is increasingly focused on the need for early identification and intervention for preschool children with disorders of speech, language, and hearing. The data show that this is a growing population in North Carolina and an increasingly diverse group in terms of race and ethnicity, as well as linguistic abilities[14]. Anecdotal evidence from SLPs indicates that demand is also increasing for their services by adults who speak English as a second language and who want to improve their diction and/or accent.

The need for bilingual professionals may be felt more acutely in certain parts of North Carolina than others. In 1998, agricultural counties in the south-eastern and south-central areas of North Carolina had a significantly higher percent of the state's Hispanic preschool age (0-4) and school age (5-19) children (**Figures 4 & 5**). ▸

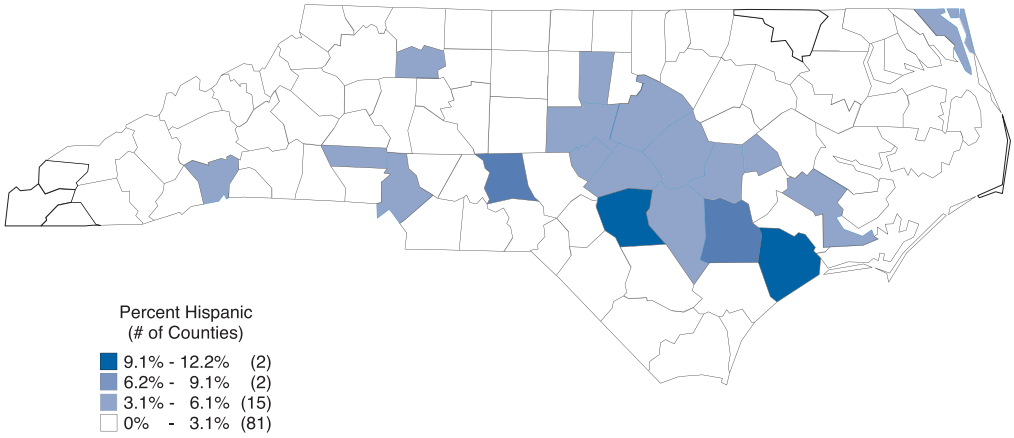
Figure 4.
Percent Hispanic Population, Children Ages 0-4 Years, North Carolina, 1998



Source: U.S. Census Bureau, Population Division, Administrative Records and Methodology Research, 1999. Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Language skills will only be part of the issue; gaining the cultural competence[15, 16], skills to facilitate interaction with an increasingly diverse clientele will also be necessary. Recognizing this need, ASHA has identified the characteristics of a culturally competent speech-language pathology professional[17]:

Figure 5.
Percent Hispanic Population, Children Ages 5-19 Years, North Carolina, 1998



Source: U.S. Census Bureau, Population Division, Administrative Records and Methodology Research, 1999. Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill

1. **Awareness**
   a. Is familiar with cultural differences in customs, values, beliefs, and behaviors pertaining to communication
   b. Uses non-biased tests or procedures that do not unfairly penalize children from minority or different language backgrounds
   c. Has knowledge about communication problems unique to, or more frequently found in, certain minority groups

2. **Acceptance**
   a. Has an appreciation for the customs, values, beliefs, and attitudes of people from different cultural and language backgrounds
   b. Is comfortable working with individuals from different backgrounds and cultures

3. **Adaptation**
   a. Uses treatment materials that present positive images of the culture and background of the child
   b. Speaks the language used by the child and family or uses the assistance of trained interpreters

[14]Unfortunately, reliable language data were not available for this report, and Hispanic ethnicity had to be used as a proxy for Spanish speaking.
[15]Cultural competence is defined in this report as the set of behaviors, attitudes, and policies that come together in an institution, agency, or among a group of individuals, that allows them to work effectively in cross-cultural situations.
[16]The definition of cultural competence used in this document is drawn from a publication entitled *Quality Health Services for Hispanics: The Cultural Competency Component* published by the Bureau of Primary Health Care, of the Health Resources and Services Administration of the United States Department of Health and Human Services. This work, in turn, draws heavily on work by Cross, TL et al in "The Cultural Competency Continuum" Toward a Culturally Competent System of Care: A Monograph on Effective Services for Minority Children Who Are Severely Emotionally Disturbed. Washington, D.C.: Child and Adolescent Service System Program (CASSP), Technical Assistance Center, Center for Health and Mental Health Policy, Georgetown University Child Development Center, 1989.
[17]http://www.asha.org/speech/development/Multicultural-Population.cfm

3. Individuals with Language/Learning Disorders

Recently, a number of states have reported an increasing incidence of children with autism and related disorders requiring speech-language pathology services, a trend that is paralleled in North Carolina. The California Department of Developmental Services reported a 238% increase in the past five years of children diagnosed with autism[18]. Data from the North Carolina Department of Public Instruction show an over 300% increase in the number of students with autism. In the 1988-89 school year, there were 526 pupils with autism; by 1998-1999 this number had jumped to 2,273. Whether these increases reflect a rising incidence of autism and other language/learning disorders or better diagnoses is the subject of research.

The growing focus on early interventions for children with speech, language, and hearing disorders may create new demand for speech-language pathology services. North Carolina's new mandatory newborn hearing screening regulations will likely result in an increase in the number of children diagnosed with hearing disorders who will require SLP services. Additionally, national and state efforts targeted toward improving literacy may provide opportunities for speech-language pathology providers to elucidate the relationship between reading deficits and language impairments and create new demand for their services.

The growing focus on early interventions for children with speech, language, and hearing disorders may create new demand for speech-language pathology services.

B. Providers of Speech-Language Pathology Services

1. Data Sources and Caveats

This section outlines what is known about speech-language pathologists and speech-language pathology assistants in North Carolina. Ascertaining the employment situation of SLPs and SLPAs working in North Carolina has been complicated by the absence of a reliable and unified data source. No single entity oversees speech-language pathologists working in the state. SLPs working in the public schools are exempted from licensure with the North Carolina Board of Examiners of Speech-Language Pathologists and Audiologists (Board of Examiners) and are overseen by the Department of Public Instruction (DPI).

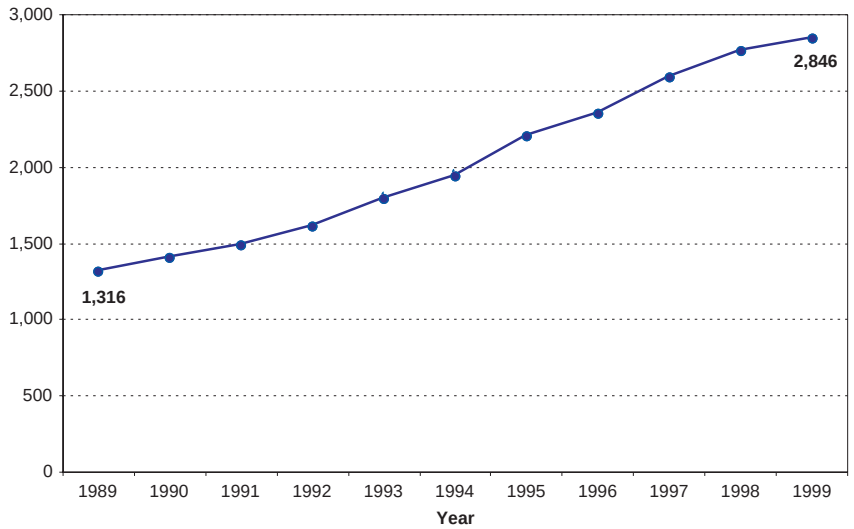
Data on licensed SLPs were collected from the Board of Examiners; information on SLPs working in the public schools was gathered from the North Carolina Department of Public Instruction. The two data sources were merged and unduplicated as much as possible, but there are disadvantages to not having a single source of licensure data on SLPs. Neither the DPI nor the Board of Examiners would share a unique identifier such as social security number so deduplication had to be done using names. The lack of a unique identifier means that there may be double counting of individuals who are both credentialed by DPI and licensed by the Board of Examiners.

Neither the DPI nor the Board of Examiners file contained reliable information on who is in active practice within the state. This is problematic because individuals who are not actively providing speech-language pathology services may choose to retain a license or DPI credential even though they are not working in the profession or have retired. With the exception of the data on SLPs certified with ASHA, no longitudinal data exist. Individuals providing speech-language pathology services who are not required to obtain licensure with the Board of Examiners and who are not credentialed public school employees (i.e. federal employees, students, physicians, and persons who are practicing under the supervision of a physician or physician practice) are not included in this analysis. Extensive data cleaning was performed on the files received from both DPI and Board of Examiners[19], but it is possible that the decision rules applied to the data resulted in the over- or under-counting of SLPs in the state.

Because SLPAs are such a recent addition to the North Carolina workforce, little data on the profession were available. Speech-language pathology assistant data included in this analysis were gathered from the Board of Examiners.

[18] "Changes in the Population of Persons with Autism and Pervasive Development Disorders in California's Developmental Services System: 1987 through 1998: A Report to the Legislature." March 1, 1999, Department of Developmental Services, California Health and Human Services Agency.
[19] The decision rules used to clean the data were documented and are available for review.

Figure 6.
Number of Speech-Language Pathologists (SLPs), North Carolina, 1989-1999



Source: American Speech-Language-Hearing Association

Note: Data were adjusted upward to reflect the fact that approximately 80% of SLPs are ASHA members. Data include individual who have dual certification as an audiologist.

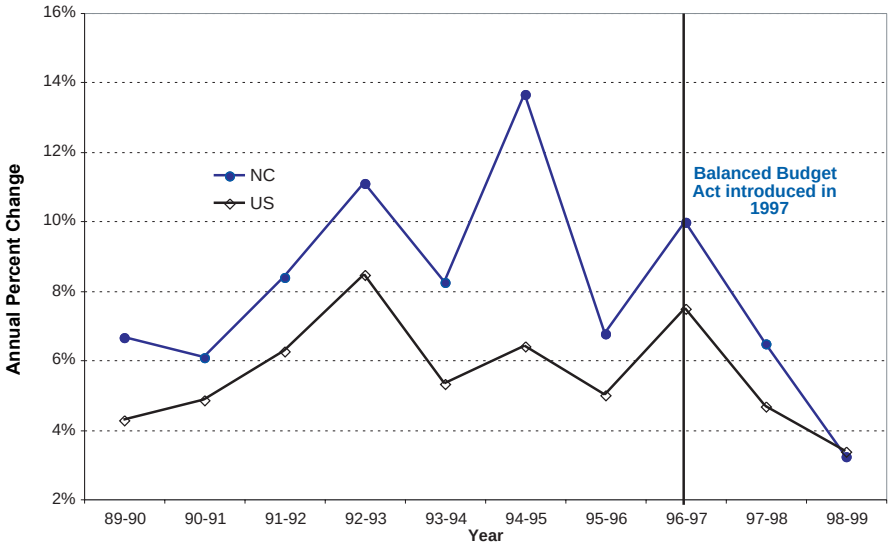
2. ASHA Data

The number of speech-language pathologists in the state has grown rapidly over the last 10 years. North Carolina had only 1,316 speech-language pathologists in 1989; a decade later that number had more than doubled to 2,846 (**Figure 6**).

Examining the annual percent change in the number of SLPs in North Carolina suggests that the state mirrors national trends and that there is some volatility in the number of SLPs entering the workforce each year (**Figure 7**). Particularly striking is the decline in the annual growth rate subsequent to the introduction of the BBA in 1997.

It is important to emphasize that these data may overestimate supply. Just because an individual is certified with ASHA and reports a North Carolina address does not mean that he or she is actively practicing as an SLP.

Figure 7.
Annual Percent Change in the Number of Speech-Language Pathologists (SLPs), N.C. and U.S., 1989-1999



Source: American Speech-Language-Hearing Association

Note: Data were adjusted upward to reflect the fact that approximately 80% of SLPs are ASHA members. Data include individual who have dual certification as an audiologist.

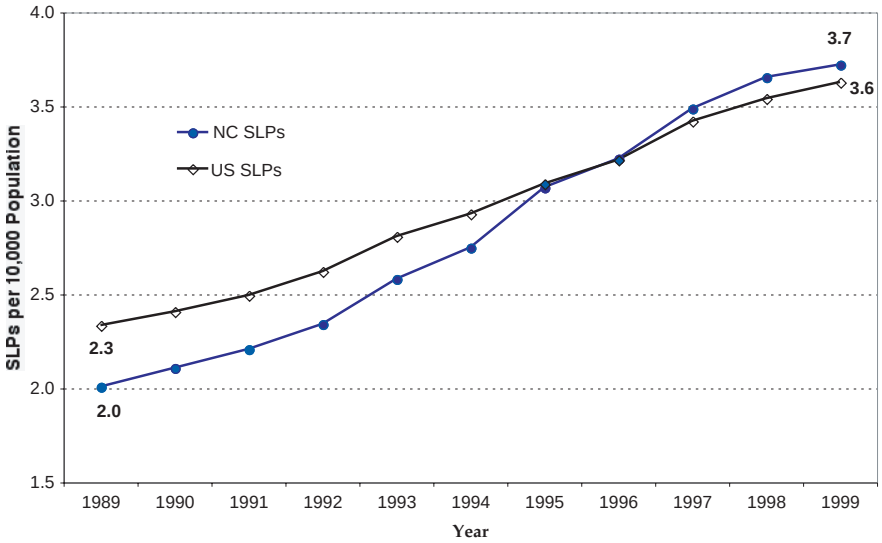
Table 4: Practice Status Reported by North Carolina Speech-Language Pathologists Certified by ASHA* 2000

	Number	Percent*
Employed Full-Time	957	81.1%
Employed Part-Time	138	11.7%
Leave of Absence	6	0.5%
Not Employed, seeking	34	2.9%
Not Employed, not seeking	20	1.7%
Retired	23	1.9%
Volunteer	2	0.2%
Total Reporting Practice Status	1,180	100.0%

*Note: About 50% of ASHA-certified SLPs did not report practice status. Percentage calculations based on respondents.
Source: American Speech-Language-Hearing Association, 2000.

Some individuals may choose to maintain certification even though they are retired, temporarily working in another profession, on maternity leave, or otherwise not actively engaged in the profession. The only data available on practice status are from ASHA and are problematic due to the fact that more than half of ASHA members did not report practice status on their certification form (**Table 4**). However, if one extrapolates from the respondents, it can be assumed that the number of actively practicing SLPs in North Carolina is actually seven percent lower than the total number certified.

Figure 8.
Speech-Language Pathologists (SLPs) per 10,000 Population, U.S. and N.C., 1989-1999



Source: American Speech-Language-Hearing Association

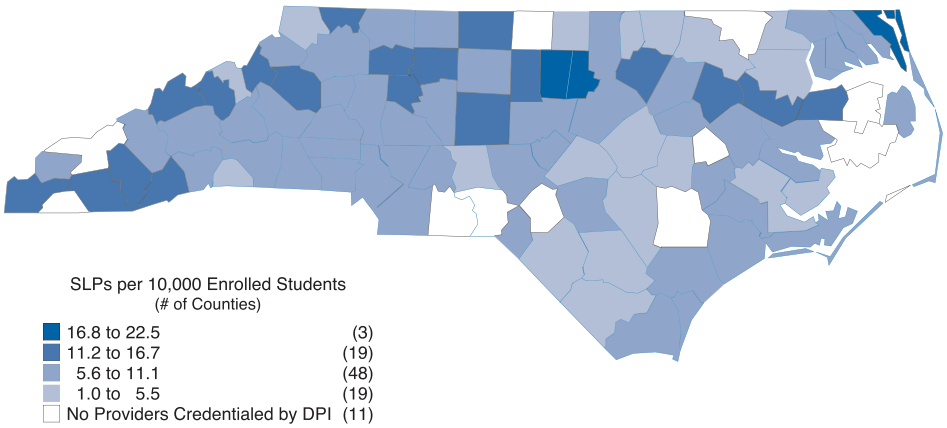
Note: Data were adjusted upward to reflect the fact that approximately 80% of SLPs are ASHA members. Data include individual who have dual certification as an audiologist.

The growth in supply of SLPs relative to the population has been substantial over the last decade (**Figure 8**). ◂ In 1989, there were 2.0 SLPs for every 10,000 persons in North Carolina. By 1999, this ratio had increased to 3.7 per 10,000. From 1989 to 1994, the North Carolina ratio lagged behind the national one; however, in 1995 and 1996, the ratios were the same. In 1997, North Carolina's ratio of SLPs overtook the national rate.

3. The Department of Public Instruction

Although speech-language pathologists who work for the public school system are exempted from licensure with the North Carolina Board of Examiners, they are credentialed through the Department of Public Instruction (DPI). According to data from DPI, there are approximately 1,100 speech-language pathologists working in North Carolina's public schools.

Figure 9.
Active Speech-Language Pathologists (SLPs) Employed by the Department of Public Instruction (DPI) per 10,000 Enrolled Students, 2000



Source: Allied Health Workforce Assessment Project, 2000;
NC Department of Public Instruction, 2000;
NC Consortium for Distance Education in Communication Sciences and Disorders, 2000;
East Carolina University Distance Education in Communication Sciences and Disorders, 2000.
Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill
Note: SLPs are assumed to be active if they have a current credential with DPI as well as an employment site. Enrollment is for the 1998-1999 school year.

Figure 9 ▸ shows the number of SLPs per 10,000 enrolled population by county. Eleven counties did not have a speech-language pathologist credentialed by DPI. These counties may be covered by contract SLPs or by SLPs working in schools in neighboring counties. Six counties reported 15 or more SLPs per 10,000 enrolled children, and a third (33) had fewer than 7.4 SLPs per 10,000 enrolled population. The number of SLPs per 10,000 enrolled population varies significantly across counties. This is likely a reflection of the variability in SLP case loads between different school systems, as well as in the eligibility criteria for students to qualify for speech-language pathology services. In addition, the higher counts of SLPs per 10,000 enrolled population may be caused by higher demand for services by parents in regions where literacy levels are higher, where language skills are more highly valued, and where there is a wider awareness of speech-language pathology services.

The vast majority (95%) of speech-language pathologists working in the schools are female. Ninety percent are of white, non-Hispanic origin, 9% are black, and less than one percent are Hispanic, American Indian/Alaskan or Asian Pacific Islander. By contrast, 63% of students in the 1998-1999 school year were white, 31% black, 3% Hispanic, 1.7% Asian Pacific Islander, and 1.5% American Indian/Alaskan native.

Table 5: SLPs Working in Public Schools by Age Group

Age Group	Number	Percent
<30	324	30%
31-40	257	24%
41-50	353	33%
51-55	87	8%
56-60	21	2%
61-65	12	1%
66-70	2	0%
71+	2	0%
Total	1,058	100%

Note: Data are for both bachelor's and master's trained SLPs. Data unavailable for 30 individuals.
Source: North Carolina Department of Public Instruction

Speech-language pathologists working in the public schools are a relatively young group; their average age is 36 (**Table 5**). ◂ Hence, attrition due to retirement is not a significant issue for the speech-language pathologist workforce employed by DPI.

Over the years, DPI has hired both bachelor's and master's prepared SLPs. These individuals fall into three main categories. SLPs who:

1. *Have a bachelor's degree and were hired before the 1982-1983 school year.*
2. *Have a master's degree and were hired between the 1982-83 and 1988-89 school years, when the DPI had the master's as the minimum degree for licensure.*
3. *Have a bachelor's degree and were hired between 1988 and 1998 (a period of perceived shortage of SLPs when the DPI provisionally credentialed individuals with a bachelor's degree)*[20].

In 1992, the North Carolina Board of Examiners sued the State Board of Education and the DPI over their policy of provisionally hiring SLPs who did not have masters' degrees. The Superior Court of Wake County initially ruled in favor of DPI[21], but the Court of Appeals of North Carolina overturned the earlier judgment and ruled in favor of the Board[22]. The Supreme Court of North Carolina later affirmed the Court of Appeals decision[23]. In 1998, a consent judgment decreed that the DPI could no longer issue provisional certification to SLPs holding less than a master's degree, essentially making the master's degree the requirement for employment. Individuals who had an undergraduate degree and were hired prior to 1981 were given until 2005 to earn a master's degree. Individuals with an undergraduate degree who were hired since 1988 were given until July 2000 to earn a master's degree.

Seventy-nine percent of SLPs working in the schools have at least master's level preparation, 18% have a bachelor's degree, 2% have advanced preparation, and less than 1% have a doctorate (**Table 6**). ▸ The distribution of speech-language pathologists by age and degree shows that bachelor's-prepared individuals fall primarily into two age groups (**Table 7** ▾). The majority is over the age of 40, but a quarter is under the age of 30.

Table 6: SLPs Working in the Public Schools by Degree

	Number	Percent
Bachelor's	200	18.4%
Master's	861	79.1%
Advanced	22	2.0%
Doctorate	5	0.5%
Total	1,088	100.0%

Source: N.C. Department of Public Instruction; NC Consortium for Distance Education in Communication Sciences and Disorders; East Carolina University Distance Education in Communication Sciences and Disorder, 2000.

Table 7: Bachelor's Prepared SLPs Working in Public Schools by Age Group

Age Group	Number	Percent
<30	44	25%
31-40	16	9%
41-50	93	51%
51-55	19	11%
56-60	6	3%
61-65	1	1%
66-70		0%
71+	1	1%
Total	180	100%

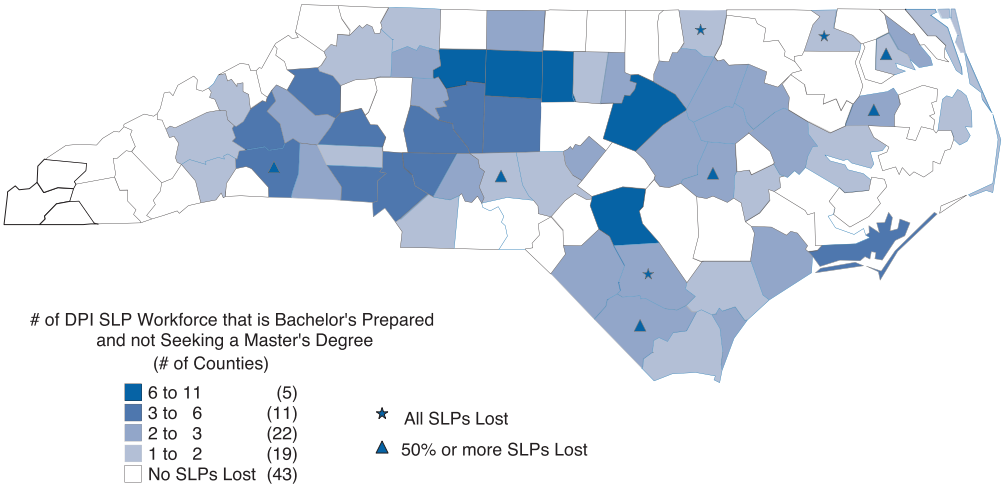
Note: Data unavailable for 20 individuals. Percentages may not sum to 100% due to rounding.
Source: Department of Public Instruction, 2000.

The North Carolina Consortium for Distance Education in Communication Sciences and Disorders (Consortium) was established after the court ruling for those DPI employees who needed to upgrade to the master's degree. Approximately 50 students have already enrolled in, or graduated from, the Consortium program and an additional 10 bachelor's level SLPs upgraded to a master's degree through a program at Eastern Carolina University. Thus, of the 200 individuals needing to upgrade, 60 have done so. If the remaining 140 SLPs do not complete the master's degree, DPI will lose 13% of its SLP workforce in the next few years. Some of this attrition would have occurred anyway due to individuals retiring before the 2005 deadline, but given that 85% of the bachelor's prepared workforce is 50 years of age or younger (**Table 7**) ◂ , most of these individuals would still have had many productive work years left.

[20]Individuals hired between 88-98 with a bachelor's degree were given a provisional credential with the stipulation that they: 1. enroll in a master's program, 2. take 6 semester hours of courses per year, and 3. have a master's at the end of five years. The DPI did not enforce the "five years or out rule" because SLPs were not getting into master's programs, or they could not get into part-time programs and the perceived shortage of SLPs continued.
[21]Caswell, J. Wake County (N.C. Sup 1996)
[22]468 S.E. 2d 826 (N.C. App. 1996)
[23]480 S.E. 2d 50 (N.C. 1997)

Figure 10 ▸ shows the distribution of North Carolina's counties that are projected to lose SLPs in their schools due to bachelor's trained providers failing to upgrade to master's degrees. Of the 57 counties that will lose practitioners, three counties (Bladen, Hertford and Warren) are facing a potential loss of all speech-language pathologists employed by DPI in the county. Another six counties (Rutherford, Washington, Wayne, Columbus, Montgomery, and Perquimans) will lose an estimated one-half to two-thirds of their schools' SLPs. The majority of counties losing more than 50% of their SLPs are located in the eastern part of the state. The data show that counties with the smallest supply of SLPs will potentially be hit hardest by losses of bachelor's prepared SLPs. These counties not only have low numbers of SLPs, but also have a low ratio of providers per 10,000 enrolled students (see **Figure 9**). In contrast, the five counties losing the largest actual counts of SLPs (Guilford, Wake, Cumberland, Forsyth, Alamance) are only losing between 9% and 24% of their DPI employed SLPs and have the highest ratios of SLPs per 10,000 enrolled students.

Figure 10.
Estimated Reduction in Department of Public Instruction (DPI) Workforce Due to Bachelor's Prepared Speech-Language Pathologists (SLP) not Seeking Master's Degrees, North Carolina, 2000



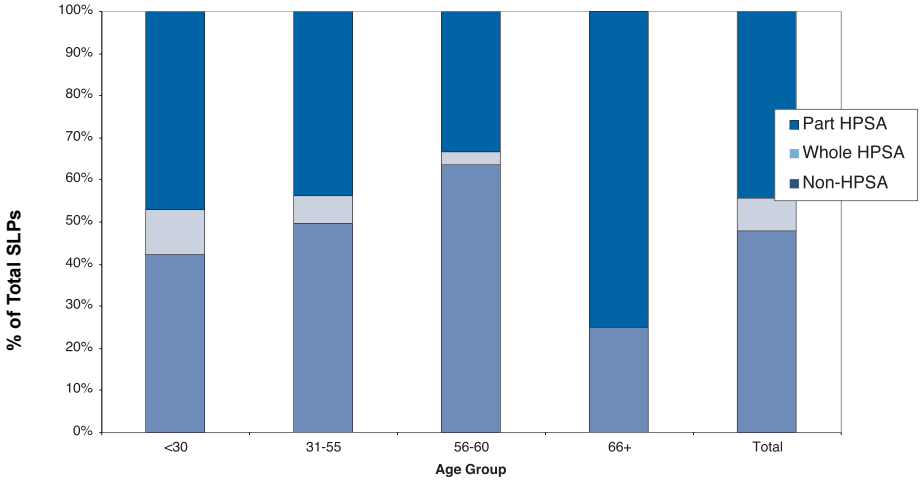
Produced by: North Carolina Rural Health Research and Policy Analysis Program, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

Source: Allied Health Workforce Assessment Project, 2000; NC Department of Public Instruction, 2000; NC Consortium for Distance Education in Communications Sciences and Disorders, 2000; East Carolina University Distance Education in Communication Sciences and Disorders, 2000.

The current labor market in the schools appears to be in balance. Two years ago about 50 school systems were actively looking for SLPs however, by the 1998-1999 school year this number had decreased to four. In the 1999-2000 year, there did not appear to be any openings for SLPs in the schools[24]. Anecdotal evidence indicates that the schools are getting more new graduate applicants and this may suggest that job opportunities in other areas are not available.

Data support this anecdotal evidence. Analysis shows that new graduates are taking jobs in geographic locations that are typically less desirable places to practice. **Figure 11** ◂ shows the percent distribution of DPI employees by age and Health Professional Shortage Area (HPSA) designation. Typically, HPSAs have a difficult time attracting new graduates due to geographic isolation, socio-economic factors, and other reasons. The fact that 58% of all DPI speech-language pathologists under the age of 30 work in whole or part-county HPSAs suggests that employment opportunities in other, more desirable geographic areas may not be available for new graduates.

Figure 11.
Speech Language Pathologists (SLPs) Currently Employed by DPI: Age Group by Health Professional Shortage Area (HPSA) Designation, 2000

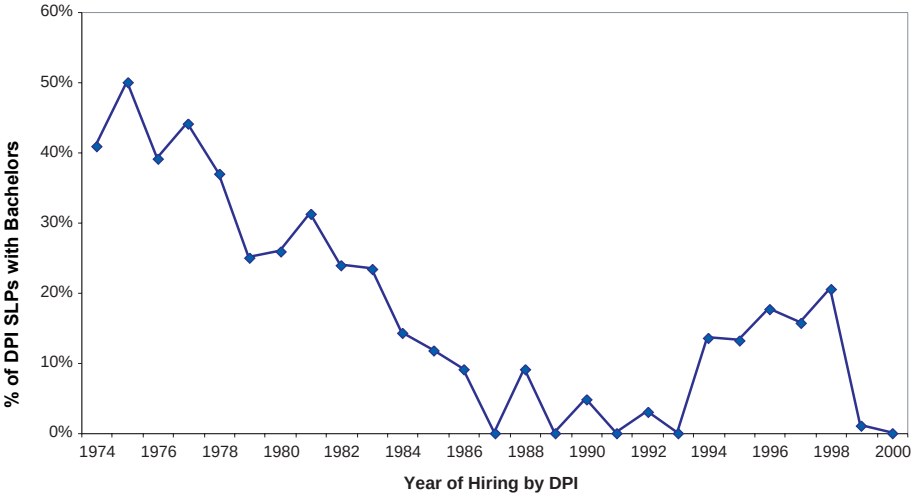


Source: Allied Health Workforce Assessment Project, 2000; Department of Public Instruction, 2000.
Area Resource File, HRSA, DHHS, 1998
Note: Age data not available for 20 individuals.

[24] Personal communication with David Mills, Section Chief of the Exceptional Children Division of the Department of Public Instruction, January 20, 2000.
[25] A county or part of a county may be designated as a HPSA if it has an inadequate number of health professionals, a population with unusually high primary care medical needs, or residents who face barriers to accessing health services. Generally these communities have high proportions of households below the poverty level, higher proportions of ethnic minorities, and are in rural areas.

While the current market for SLPs in the schools is in balance, DPI's future may be more problematic. The move toward a uniform educational credential for speech-language pathologists removes the segmented labor market for speech-language pathology services that has existed in North Carolina. Examining the percent of DPI's currently employed SLPs who are bachelor's level by year of hire (**Figure 12**) ▸ suggests that traditionally, when the schools have faced a labor shortage (e.g. between 1994-1998), they hired bachelor's level SLPs.

Figure 12.
Percent of Speech-Language Pathologists (SLPs) Currently Employed by the NC Department of Public Instruction (DPI) That Are Bachelor's Prepared by Year of Hire*



Source: Allied Health Workforce Assessment Project, 2000; NC Department of Public Instruction, 2000.
Note: Age data not available for 20 individuals.
*Data received from DPI mid-year 2000.

Once all SLPs in North Carolina have a master's degree, two outcomes are likely: there will be more fluid movement of SLPs between the schools and other employment settings; and the DPI will have to directly compete with other employment settings during times of excess demand. It is likely that individuals who choose to work in the school system directly after graduation will also become licensed with the Board of Examiners so that they have the option of moving to higher paying jobs in the health care sector when they are available. They may also seek Board licensure so that they are qualified to supervise SLPAs.

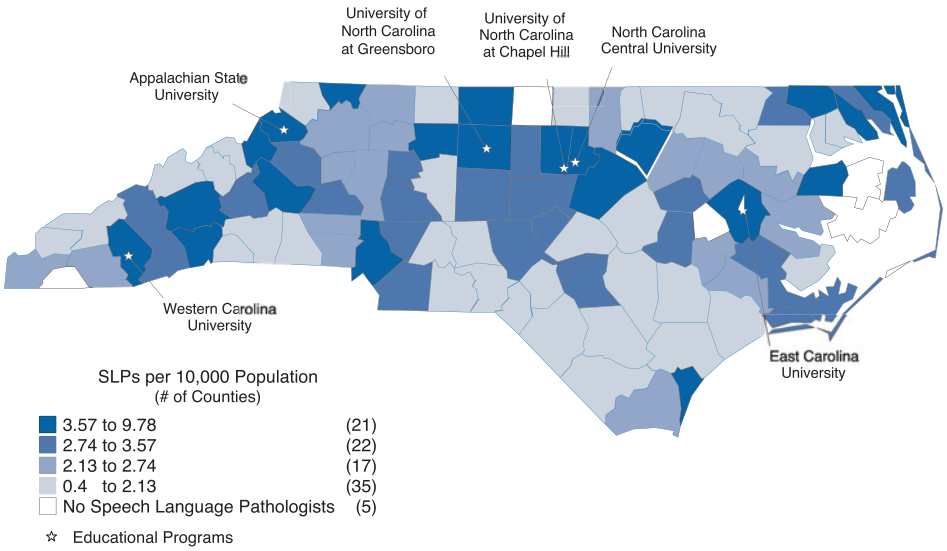
The potential loss of 13% of the SLP workforce will leave the school system with a number of choices. DPI can hire new SLPs to take the place of the lost workforce, utilize SLPAs more effectively to extend the ability of SLPs to provide services, or raise the case loads of existing SLPs. The ability to hire new SLPs to take the place of exiting bachelor's prepared practitioners will depend on whether DPI can offer salaries, benefits, and working conditions that are competitive with other workforce settings. If budgetary concerns constrain the hiring of new SLPs, DPI may need to explore how to better utilize SLPAs in the schools. However, if DPI cannot hire new SLPs or does not increase its use of SLPAs, existing case loads may rise. This in turn may drive more SLPs out of the schools and will provide fuel to existing professional debates about the effect of caseload on student outcomes. Preliminary evidence from ASHA's National Outcomes Measurement System[26] appears to support a potential relationship between high case loads and poorer outcomes, although the methodology did not adjust for severity and time spent traveling between school systems. Professional momentum appears to be headed toward taking action to limit case loads. Members of the profession have expressed a desire to infuse into the SLP and SLPA educational curriculum (both degree and continuing education) the knowledge and skills for self-advocacy, consistent with codes of professional ethics, to assist practitioners in defining maximum case loads.

4. Board of Examiners Data

Data were received from the North Carolina Board of Examiners. The files were cleaned and individuals who had an address outside North Carolina, who held an audiology license only, who were retired, or worked in the public schools were removed from the file. A total of 1,781 speech-language pathologists remained after these data edits. Limited information was available from the Board; no race or age information was available. Ability to speak another language and educational information are collected on the Board's licensure forms, but due to staffing constraints are not currently entered into the database. The majority of licensed SLPs hold a master's degree (97%), the rest are doctoral prepared. Thirty-two individuals are dually licensed in speech-language pathology and audiology.

[26] ASHA, National Outcomes Measurement System, National Data Report 1999-2000: K-6 Schools http://professional.asha.org/members only/images/k6natldata.pdf.

Figure 13.
Speech-Language Pathologists (SLPs) per 10,000 Population and Location of Educational Programs, 2000



Source: Allied Health Workforce Assessment Project, 2000.
Produced by: North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill

Five counties do not have any SLPs, 35 have about two or fewer SLPs per 10,000 population, and 21 have more than 3.5 SLPs per 10,000 population (**Figure 13**). ▲ The higher numbers of SLPs per population in the regions surrounding education programs may be explained by the tendency of students to settle near where they have trained. Additionally, in areas with education programs, there is a wider awareness of speech-language pathology services and this may create a higher demand for services.

The supply of speech-language pathologists relative to the population varies by AHEC region (**Table 8**). ▸ Wake AHEC has the largest supply of SLPs relative to the population, and Area L and Southern Regional have the lowest provider-to-population ratios.

Table 8: Speech-Language Pathologists by AHEC Region, 2000

AHEC Region	Number of SLPs	1998 Population	SLPs/10,000 Population
Area L	64	288,371	2.2
Charlotte	438	1,266,876	3.5
Coastal	128	350,214	3.7
Eastern	327	890,800	3.7
Greensboro	428	925,887	4.6
Mountain	226	629,296	3.6
Northwest	444	1,324,317	3.4
Southern Regional	176	756,406	2.3
Wake	569	1,114,923	5.1
Total	2,800	7,547,090	3.7

Source: Allied Health Workforce Assessment Project; North Carolina Board of Examiners; Department of Public Instruction,2000

5. Data Merged from Board of Examiners and Department of Public Instruction

To obtain a more comprehensive profile of the speech-language pathology workforce, data files from the DPI and the Board were merged. Sixty-nine individuals duplicated in the files were removed[27]. The merged file contains a total of 2,800 speech-language pathologists; this total is very close to the estimates from the ASHA data (2,846) of SLPs certified in North Carolina. On average, North Carolina has 3.7 speech-language pathologists per 10,000 population; however, there is variation among counties.

As is typical of other health professions, the supply of speech-language pathologists relative to the population is greater in North Carolina counties that have not been designated health professional shortage areas (HPSAs) (**Table 9**). ▼ Whole county HPSAs have two SLPs per 10,000 population, part-county HPSAs mirror the state average of 3.7, and non-HPSA counties have about four SLPs per 10,000 individuals. The supply of speech-language pathologists is also greater in metropolitan areas of the state than in nonmetropolitan ones (**Table 10**). ▼

Table 9: Speech-Language Pathologists by Health Professional Shortage Area (HPSA) Status, 2000

	Number of SLPs	1998 Population	SLPs/10,000 Population
Whole County HPSA	153	756,205	2.0
Part County HPSA	1,245	3,367,092	3.7
Not a HPSA	1,402	3,423,793	4.1
Total	2,800	7,547,090	3.7

Source: Allied Health Workforce Assessment Project; North Carolina Board of Examiners; Department of Public Instruction

Table 10: Speech-Language Pathologists by Metropolitan and Nonmetropolitan Areas, 2000

	Number of SLPs	1998 Population	SLPs/ 10,000 Population
Nonmetropolitan	615	2,475,583	2.5
Metropolitan	2,185	5,071,507	4.3
Total	2,800	7,547,090	3.7

Source: Allied Health Workforce Assessment Project; North Carolina Board of Examiners; Department of Public Instruction

[27]Duplicates were first removed by identifying individuals from the Board file who had listed a public school employment site. Then, since social security numbers were not available, the two files were checked for duplicates by name.

VI. SPEECH-LANGUAGE PATHOLOGY ASSISTANTS

In 1994, The North Carolina General Assembly passed an addition to the state licensure law governing speech-language pathologists and audiologists, authorizing the registration of speech-language pathology assistants (SLPAs) by the Board of Examiners. The Board examined other states' laws and developed rules governing SLPAs that were adopted in 1997. The same year, the first students entered speech-language pathology assistant education programs. For registration with the Board, SLPAs must complete an SLPA associate's degree or a bachelor's degree, and several SLPA courses developed by the North Carolina Department of Community Colleges, as well as pass a competency test approved by the Board. SLPAs work under the supervision of SLPs. A full-time (30 hours per week or more) speech-language pathologist may supervise up to two SLPAs.

Of the 67 graduates from SLPA programs in 1999 and 2000, only 26 are currently registered with the Board of Examiners[28]. Sixteen are working with SLPs who are employed in private practice. Five work for DPI. One is employed in a hospital, one works in a nursing home, one is in a rehabilitation hospital and two are working in child developmental therapy. The remaining individuals are in related and non-related fields. Speculation about why SLPAs are not being employed relate to a number of factors. One issue, raised repeatedly by individuals in the profession, relates to a lack of understanding by SLPs and their employers about the role and utility of assistive personnel. To this end, the Board of Examiners provided a grant to the North Carolina Association of Supervisors in Speech-Language Pathology and Audiology which developed state-wide workshops in supervision of SLPAs by SLPs. ASHA has also recently released the results of a job analysis, conducted by the Educational Testing Service and based extensively on an earlier analysis commissioned by the North Carolina Board of Examiners, that seeks to delineate the scope of responsibilities, tasks, and knowledge base that form the foundation of SLPA practice.

Members of the profession speculate that SLPAs are not being employed in great numbers due to a lack of understanding by SLPs and their employers about the role and utility of assistive personnel.

A second issue relates to reimbursement. Difficulties have been encountered in obtaining Medicaid reimbursement for speech-language pathology services rendered by SLPAs. Even though these services have been reimbursable under Medicaid since the creation of the SLPA role, SLPs did not understand that SLPAs could not sign the claim form and Medicaid workers were not aware of how to handle claims submitted by SLPs who used the help of SLPAs to provide therapy.

Because the SLPA role is a recent development in North Carolina, information about how these new health professionals are being utilized and what impact they are having on patient care and clinical outcomes is not yet available. As SLPAs increase in number and become deployed more widely in different clinical settings and community locations, their growth is likely to affect the supply and distribution of SLPs. Because we do not yet have direct evidence from within the SLP community, we need to rely on indirect evidence from other allied health professions that have a longer history of utilization of assistants, (e.g., physical therapist assistants and occupational therapy assistants) to project what impact this new development might have on the speech-language pathology workforce.

An earlier study of the physical therapy (PT) workforce by the Allied Health Workforce Assessment Project[29] found several trends that might be replicated in the speech-language pathology workforce over the next several years. Findings from that study suggest that some selective employment of physical therapist assistants (PTAs) for physical therapists (PTs) might be occurring, especially in rural underserved communities. A similar pattern might be expected to occur in institutional settings such as schools and state hospitals, as these employers might recognize the cost-effectiveness of utilizing SLPAs and therefore provide more opportunities for employment. The earlier study also suggested that PTAs were much more likely than PTs to reflect the racial diversity of the communities in which they were trained and deployed. Again, it is likely that such a development might well occur in the speech-language pathology arena. This phenomenon is due to the fact that local employers who perceive a severe shortage of allied health personnel are more likely to be in rural and medically underserved areas and to work collaboratively with local training institutions to develop assistant training programs to fill that service gap.

[28]Personal correspondence (1/24/01) from Sandra Capps, Secretary, Board of Examiners
[29]The physical therapy report, "Maintaining Balance: The Physical Therapy Workforce in North Carolina in the Year 2000" is available at www.shepscenter.unc.edu/hp.

VII. SUPPLY OF SPEECH-LANGUAGE PATHOLOGISTS AND SPEECH-LANGUAGE PATHOLOGY ASSISTANTS FROM EDUCATIONAL INSTITUTIONS

A key issue for workforce planning in North Carolina relates to the extent to which policies under the control of the state can affect the size, composition, and distribution of the allied health care workforce. The primary impact that state policymakers can have on these factors is through support for educational institutions. This is especially true of the speech-language pathology workforce because all of the programs educating SLPs and SLPAs in North Carolina are state-supported.

Six university master's programs in North Carolina educate speech-language pathologists (**Figure 14**). ▾ On average over the next five years, these schools will graduate a total of about 183 SLPs annually, of whom about 135 will remain in North Carolina to practice. The output of SLPs is expected to be steady; no programs report plans to either increase or decrease enrollments.

To understand the relationship between the output of North Carolina's educational institutions and new entrants in the workforce, we have calculated an indicator called the "retention factor." This index was calculated by averaging the estimated percentage of graduates from North Carolina speech-language pathology educational programs who will remain instate to practice after graduation. These retention data were obtained from a survey of the directors of the state's speech-language pathology educational programs. The retention measure should be interpreted with some caution. The index is somewhat problematic because although most educational programs collect information on where their graduates are practicing post-graduation, this information is often incomplete or unreliable.

Figure 14
Graduating class size and expected additions to speech-language pathologist workforce from in-state educational institutions: North Carolina, 1996-2005

	Graduating Class Size					Projected Graduating Class Size					Retention Factor #	Expected additions to workforce						
Educational Institution	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**		**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Appalachian State University	40	28	47	35	31	36	32	33	33	33	0.75	26	23	27	24	25	25	25
East Carolina University	*	32	32	32	32	32	32	32	32	32	0.75	24	24	24	24	24	24	24
North Carolina Central University	28	27	32	32	29	28	28	32	37	32	0.63	20	18	17	17	20	23	20
UNC-Greensboro	*	*	24	28	30	24	33	33	33	33	0.95	27	29	23	31	31	31	31
UNC-Chapel Hill	*	*	29	31	30	37	30	35	35	35	0.68	21	21	26	21	24	24	24
Western Carolina University	*	*	*	19	22	21	23	20	20	20	0.65	12	14	14	15	13	13	13
Total	68	87	164	177	174	178	177	185	190	185		130	129	130	132	137	140	137

* Data unavailable.
# The retention factor is based on averaged projected estimates of the percentage of the graduates from 2001-2003 classes that will practice in North Carolina after graduation. Estimates assume that the retention rate is constant with historical trends. This factor is applied prospectively to projected graduating class size to estimate new NC workforce entrants.

Note: Both East Carolina University (ECU) and UNC-Chapel Hill have doctoral programs in Speech and Hearing Science. The first class of students started at ECU in 1996. UNC-Chapel Hill will enroll its first students starting fall of 2002. These programs have not been included in this table because graduates of Ph.D. programs are, for the most part, less likely to be involved in direct patient care. See text for further information.

Sources: Allied Health Workforce Assessment Project, Survey of Speech Language Pathology Educational Program Directors, 2000.

The overall retention factor for SLPs statewide is about 0.74. This means that almost three quarters of the SLPs trained in the state's educational institutions can be expected to enter the North Carolina SLP workforce. Although retention appears to be high across all programs, it does differ by school, ranging from 0.63 for North Carolina Central University to 0.95 for The University of North Carolina at Greensboro. While much of this variation may be attributed to reporting issues, true differences may exist in retention across programs. The percent of students remaining instate post-graduation is highly dependent upon the percentage of graduates who are North Carolina residents. The likely reason the retention factor is relatively high across all six programs is that each of these state-supported programs admits a high percentage of North Carolina residents who will remain instate after graduation. The fact that The University of North Carolina at Chapel Hill and North Carolina Central University anticipated that as many as 25% of its graduating SLPs would pursue employment in other states may indicate that these universities have a larger percentage of out-of-state students than schools with higher retention rates. The percentage of graduates who pursue additional education also reduces the retention rate. Seven percent of East Carolina University's graduating class of 2000 went on to obtain further schooling as did five percent of Western Carolina and four percent of The University of North Carolina at Chapel Hill's classes of 2000.

There are two doctoral programs in Speech and Hearing Sciences with a focus in speech-language pathology in North Carolina. The East Carolina University program accepted its first six students in 1996 and the first of these students graduated in 2000. East Carolina University will be accepting three students into its program per year starting in 2001. The recently approved new Ph.D. program at The University of North Carolina at Chapel Hill will be enrolling about four students a year in its Ph.D. program starting in 2002 and the first of these students will be graduating in 2005. These programs have not been included in Figure 15 as most of these Ph.D.-prepared SLPs will likely be on an academic track as future faculty and not involved in direct patient care. Nevertheless, the supply of Ph.D.-prepared SLPs is crucial because these individuals will be the educators who train future SLPs. It is uncertain what the retention rate will be for graduates of these two Ph.D. programs because they are both very early in their existence.

Five community college programs educate speech-language pathology assistants (**Figure 15**). In 1999, the first class of 29 SLPAs graduated from community college programs. All of these individuals were female and their average age was 35 (range: 21-52 years). Sixteen students left the program, primarily due to pregnancy, financial constraints, career changes, and scheduling difficulties. Enrollments are expected to be steady in the next five years, with an average of about 30 graduates total annually. Calculating the retention of North Carolina educated SLPAs is problematic because the SLPA role is so new and obtaining data on the employment of graduates of SLPA programs is difficult. At the time of the survey, employment information was not available on graduates for two schools, therefore, retention factors for these two institutions were created by averaging the retention factors of the three SLPA programs that did report data. When the retention index is applied to the projected graduation class size of future SLPA programs, it appears that about 20 new SLPAs will enter employment in North Carolina per year for the next five years.

Figure 15
Graduating class size and expected additions to speech-language pathology assistant workforce from in-state educational institutions: North Carolina 1998-2005

	Graduating Class Size		Projected Graduating Class Size					Retention Factor #	Expected additions to workforce						
Educational Institution	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**		**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Southwestern Community College	2	5	3	4	3	3	3	0.65	1	3	2	2	2	2	2
Fayetteville Technical Community College	7	11	6	8	7	7	7	0.70	5	8	4	6	5	5	5
Caldwell Community College & Tech. Inst.	7	11	6	10	8	8	8	0.65	5	7	4	6	5	5	5
Cape Fear Community College	6	8	4	4	6	6	6	0.30	2	2	1	1	2	2	2
Forsyth Technical Community College	7	3	9	10	7	7	7	0.96	7	3	8	9	7	7	7
Total	29	36	28	34	30	30	30		19	22	19	24	20	20	20

The retention factor is based on averaged projected estimates of the percentage of the graduates from 2001-2003 classes that will practice in North Carolina after graduation. Estimates assume that the retention rate is constant with historical trends. This factor is applied prospectively to projected graduating class size to estimate new NC workforce entrants. Retention factors for Southwestern Community College and Caldwell Community College and Technical Institute were unavailable and estimated by taking an average of Fayetteville, Cape Fear and Forsyth Technical Community Colleges' retention rates.

Sources: Allied Health Workforce Assessment Project, Survey of Speech Language Pathology Assistant Lead Instructors, 2000.

The retention factor may actually overestimate the number of SLPAs who will actually find work in the profession in North Carolina. Speech-language pathology assistants are finding it difficult to find employment; four of the five programs reported that between 30 to 60% of their class of 2000 graduates were unable to find employment in the profession within six months following graduation. Additionally, the projected graduation rates for the schools, based only on two years of actual graduating classes, may be somewhat unreliable.

The role of the SLPA is still emerging. It is too early to tell, but it is likely that SLPA programs will find that the retention patterns of their graduates will mirror those of Physical Therapist Assistant (PTA) graduates suggested by an earlier study of the physical therapy workforce[30]. The study found that PTAs' practice settings were much more geographically clustered in the areas near their training sites than were PTs and there seemed to be a consensus perception among training program directors (mostly located in community colleges) that they were recruiting students for this profession from a local area and deploying them within a narrow radius. It would not be surprising to find high retention rates and a similar phenomenon of graduates working in communities close to the community colleges where they trained among SLPAs as well.

[30]The physical therapy report, "Maintaining Balance: The Physical Therapy Workforce in North Carolina in the Year 2000" is available at www.shepscenter.unc.edu/hp.

VIII. CONCLUSIONS AND RECOMMENDATIONS

This final section of the report summarizes the panel's findings and reports the panel's recommendations about actions needed to address current and future issues in the speech-language pathology workforce in North Carolina.

8.1 Supply and Education

Conclusion: The data illustrated in this report suggest that the overall supply of, and demand for, SLPs and SLPAs seem to be in balance at this time. An excess supply of practitioners does not exist, nor is it likely to occur in the near term given the continuation of current trends in the North Carolina workforce and educational system. The situation does bear continued monitoring however, because although the traditional signposts of shortage in the overall market (high vacancy rates, rising salaries) are not present, shortages in specific subsets of the workforce are indicated.

> ***8.1.1 Recommendation:*** *Maintain the status quo with respect to the number of programs and the size of enrollments in SLP and SLPA educational programs.*

Conclusion: Although the supply of SLPs in clinical service delivery seems to be in balance at present, availability of faculty to teach in SLP programs is an increasing problem. Too few doctoral students have graduated in the past twenty years to fill vacancies left by an increasing number of retirees. Hence, the ability of the existing educational programs to hire enough faculty to teach current and future students is in jeopardy.

> ***8.1.2 Recommendation:*** *Develop educational policy (e.g. space, funding) to ensure an adequate supply of doctoral-level faculty for the six currently existing programs in North Carolina offering the master's degree in speech-language pathology.*

Conclusion: The estimated attrition of about 13% of the DPI workforce due to bachelor's-prepared SLPs not upgrading to the master's degree is cause for concern. Case loads in the schools vary substantially across systems and the counties projected to be hardest hit by this attrition already have lower than average numbers of SLPs per enrolled population. The potential loss of bachelor's-prepared SLPs from the schools will likely exacerbate existing geographic disparities. Currently, only five SLPAs are employed by DPI, and are therefore underutilized as a mechanism for addressing caseload variations. Concerns about the current and future supply of SLPs in the schools fuel existing professional debates about the relationship between high case loads and student outcomes.To this end, panel members acknowledge a need for the profession to advocate for inclusion in SLP and SLPA education program curriculum (both degree and continuing education) the knowledge and skills for self-advocacy, consistent with codes of professional ethics, to assist practitioners in defining maximum case loads. These professional efforts, combined with attrition of bachelor's-prepared SLPs from the schools, could result in a shortage of SLPs employed by DPI.

> ***8.1.3 Recommendation:*** *Increase efforts to develop mechanisms to assist DPI-employed clinicians without masters' degrees who desire to continue in the profession, and have appropriate credentials for admission, to obtain a master's degree. Efforts should be focused particularly on counties that have low SLP-per-population ratios. Such mechanisms may include, but are not limited to, scholarships, leaves of absence for full-time study, availability of down-link sites within 50 miles of clinicians' residences, and/or loans forgiven for years of service to schools in underserved areas.*

> ***8.1.4 Recommendation****: Encourage the training of DPI-employed SLPs in the supervision of SLPAs and advocate for the utilization of SLPAs in schools.*

8.2 Speech-Language Pathology Assistants

Conclusion: The data suggest that speech-language pathology assistants are underutilized in the state. Contributing to this underutilization is the fact that SLPAs are a newly authorized care provider in N.C. and their role is currently being defined by the profession and by the market. Many of the underlying causes of their lack of employment appear to be related to issues that are being addressed by both state and national entities (i.e., Medicaid reimbursement, establishment of mechanisms to facilitate reciprocity of registration across states, etc.). The panel makes the following recommendations with respect to education efforts:

> ***8.2.1 Recommendation:*** *Educational policymakers should avoid downsizing or closing programs in response to attrition from educational programs, declines in applicant pools, or lack of employment opportunities post-graduation. Time is needed to monitor the evolving SLPA role. Programs experiencing difficulties should receive continued support for a minimum of three to five years so local, state, and national trends can be observed and interpreted.*

8.2.2 Recommendation: *Disseminate more information to SLPs and their employers about the role, capabilities, utility, and value of the SLPA. ASHA's new job analysis of the SLPA role, conducted by the Educational Testing Service and based extensively on an analysis commissioned by the North Carolina Board of Examiners, is an appropriate foundation for these educational efforts.*

8.2.3 Recommendation: *Design and obtain funding for programs aimed at helping SLPs develop the skills needed to supervise SLPAs.*

Conclusion: Ongoing monitoring of the impact of the emerging SLPA role is necessary. Barriers to employment that are amenable to action should be identified. Emphasis should also be placed on observing and documenting the extent to which SLPAs are extending the effectiveness of SLPs, enabling clinical services to be introduced to new populations, and increasing the intensity and quality of services received by existing clienteles.

8.2.4 Recommendation: *Collect data including, but not limited to, the type of clinical setting, type of employer, and location(s) of communities where SLPs and SLPAs work in a uniform and coordinated way, so that their joint and separate contributions to expanding the volume and quality of services provided and access to those services can be documented effectively.*

8.2.5 Recommendation: *Conduct a focused pilot study on the utilization of SLPAs by SLPs in the assessment and management of dysphagia.*

8.3 Distribution of Speech-Language Pathology Personnel

Conclusion: The overall supply of SLPs and SLPAs is close to national ratios. However, supply is higher in metropolitan areas than the national average, and is substantially below the national ratios in nonmetropolitan and traditionally under-served health professional shortage areas. The state's urban areas may have reached a saturation point, but there is room for expansion of employment opportunities in other geographic areas and through the development of new roles for SLPs and SLPAs.

8.3.1 Recommendation: *Continue to assess trends in geographic disparities and augment this information with a more focused assessment of the nature and extent of employment opportunities for graduates that are available in nonmetropolitan and health professional shortage areas.*

8.3.2 Recommendation: *Consider state-funded financial incentives for employment in underserved health professional shortage areas, such as forgiving student loans for years of service to schools in underserved areas.*

8.4 Diversity

Conclusion: The problem of underrepresentation of minorities (especially racial, ethnic, and language minorities) in the health professions is a long-standing one and is by no means limited to the speech-language pathology workforce. Despite a steady growth in numbers, the diversity of the speech-language pathology workforce does not match that of North Carolina's current or future population. Also at issue is the disparity in the balance of men and women in the speech-language pathology workforce. Developing effective strategies that encourage workforce diversity requires continued monitoring of the current workforce as well as the pool of potential new SLPs and SLPAs being educated in North Carolina programs.

8.4.1 Recommendation: *Develop an effective strategy to collect and analyze application, admission, matriculation, graduation, certification/licensure, and initial employment data from both SLP and SLPA education programs in North Carolina, including demographic data on race, ethnicity, linguistic competence, and gender.*

8.4.2 Recommendation: *Enlarge and develop the applicant pool in both educational and employment settings by effectively promoting the speech-language pathology profession to persons who are from racial/ethnic groups that have historically been underrepresented in the profession (i.e. African-Americans, Native Americans, Hispanics and Asian-Pacific Islanders of the Vietnam era). The recruitment of males and people who are competent in more than one language is equally important. Effective recruitment strategies should also include mechanisms for communicating employment opportunities (unfilled positions) to all SLP and SLPA educational programs in NC.*

8.4.3 Recommendation: *Assess and disseminate information about the success of minority recruitment and retention efforts in colleges, universities and other post-secondary institutions that have high minority enrollment.*

8.4.4 Recommendation: *Monitor shifts in affirmative action policies affecting the health professions at a national and state level.*

8.4.5 Recommendation: *Collect better information through licensure (Board of Examiners) and credentialing (DPI) processes on the ethnic/racial diversity gender, and language capabilities of speech-language pathology professionals.*

Conclusion: The increase in the number of individuals who speak a language other than English in North Carolina poses a unique challenge for the speech-language pathology profession, since speech and communication form the foundation of the profession. The need exists for increased numbers of SLPs and SLPAs who are not only competent in English, but also in other languages and who are at least culturally sensitive and, at best, culturally competent[31, 32].

8.4.6 Recommendation: *Develop courses and/or modules to enable currently enrolled students, as well as actively practicing professionals, to gain the skills necessary to work with North Carolina's linguistically and culturally diverse population.*

8.4.7 Recommendation: *Develop an inventory of the linguistic capabilities of practicing professionals so that there is a pool of practitioners who can assist their colleagues with language barriers. This inventory could be disseminated by publishing the language abilities of SLPs and SLPAs in the annual directory of the Board of Examiners.*

8.5 Data Issues and Workforce Surveillance

Conclusion: The panel acknowledges that currently existing data on the speech-language pathology workforce are insufficient to effectively monitor workforce trends. A complete database that is inclusive of all SLPs and SLPAs in the state's workforce would enable all stakeholders to better distinguish between short-term fluctuations in demand occasioned by changes in employment levels, or reimbursement policies from underlying long-term trends that require more deliberate and coordinated efforts.

8.5.1 Recommendation: *Require all SLPs in North Carolina to be licensed by the Board of Examiners. This would ensure that all SLPs (those licensed through the Board of Examiners and those working in schools) could be monitored through one organization.*

8.5.2 Recommendation: *Until all SLPs are required to be licensed by the Board of Examiners, obtain agreement between the Board of Examiners and DPI on the data elements needed in a minimum data set to be collected on both the re-licensure survey of the Board of Examiners and re-certification survey of the DPI.*

8.5.3 Recommendation: *The minimum data set should include, among other data elements, practice location, specialty, employment setting, activity status (i.e. active practice, retired, etc.), number of practice hours per week, location and name of training program, age, race, ethnicity, gender, and language competencies.*

8.5.4 Recommendation: *Seek the resources necessary to routinely computerize critical pieces of data. Establish data analysis mechanisms through the Board of Examiners that are reimbursable at a fee at least sufficient to cover costs.*

Conclusion: Better data collection will improve educational program planning and enhance the ability of all stakeholders in the speech-language pathology community to address diversity issues, geographic disparities, and other workforce challenges. Tabulation and dissemination of this information will help stakeholders to identify imbalances and fine-tune policy decisions in a more timely and objective manner. As objective data are accumulated, ongoing analyses of trends might minimize the tendency for entities to react prematurely or unilaterally to transient events.

8.5.5 Recommendation: *Establish ongoing liaisons with ASHA to identify a common data set, and develop data collection mechanisms and vehicles for sharing data between North Carolina and other states.*

8.5.6 Recommendation: *Monitor geographic trends in supply including county-level ratios, underrepresentation of minorities, urban versus rural differences, and AHEC regions.*

8.5.7 Recommendation: *Continue periodic reevaluation of workforce needs relative to demographic changes and population needs.*

---

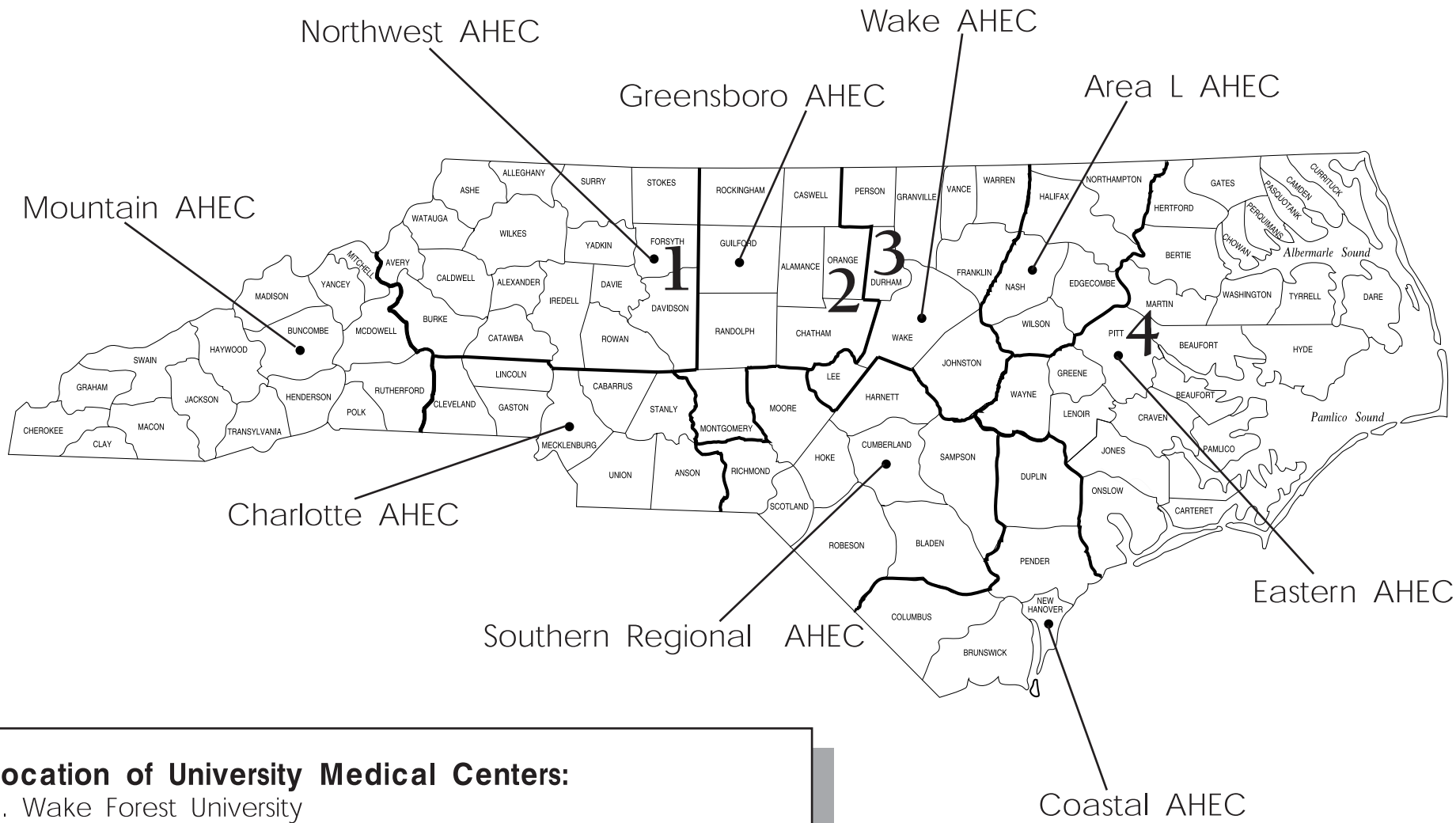
[31]Cultural competence is defined in this report as the set of behaviors, attitudes and policies that come together in an institution, agency, or among a group of individuals that allows them to work effectively in cross-cultural situations.

[32]The physical therapy report, "Maintaining Balance: The Physical Therapy Workforce in North Carolina in the Year 2000" is available at www.shepscenter.unc.edu/htp.

If you need additional copies of this report, it is available on-line in PDF format at: http://www.shepscenter.unc.edu/hp

North Carolina Counties Served by AHEC

North Carolina Area Health Education Centers Program



Location of University Medical Centers:

1. Wake Forest University
2. University of North Carolina at Chapel Hill
3. Duke University
4. East Carolina University

Revised 7/98