A STUDY OF
THE HIGHER EDUCATION NEEDS
OF NORTHEAST TEXAS

FINAL REPORT

October, 1994

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The presidents, administrators, and faculty of the fourteen public colleges and universities in the region who took the time to help us understand their institutions and the communities they serve.

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EXECUTIVE SUMMARY

The fourteen institutions of higher education in east and northeast Texas formed an ad hoc consortium and commissioned a study to identify the higher education needs of the 36 counties that comprise their primary service area. This study, conducted by NCHEMS Management Services, Inc. (NMSI), involved:

- analyses of data and development of comparative statistics that shed light on unmet educational needs—data about participation rates, educational attainment of the adult population, and the availability of educational programs in the region
- interviews with faculty and administrators in each of the fourteen institutions
- interviews with employers, in both public and private sectors and across the array of industries in the region, to identify their needs both for new employees and for continuing education of current employees
- interviews with leaders of local economic development groups and staff of Chambers of commerce in several cities.

These activities resulted in a number of findings about unmet educational needs and about characteristics of northeast Texas that affect how these needs can be addressed. As context for this assessment of needs, it is important to understand that the region is well endowed with community colleges, many of which grew out of a junior college, transfer-oriented tradition; has a fairly standard complement of baccalaureate and master’s programs, with the absence of engineering, rigorous science and masters level health programs being notable; and has only two doctoral programs and no first-professional programs (law, medicine, etc.). This means that the region provides a less diverse array of educational opportunities to its citizens than do the other regions of the state.

While a wide variety of unmet needs were identified, the following were clearly the most strongly felt:

- Basic workforce literacy skills. While many would argue that this is not higher education, employers indicate that improving the basic skills of their current employees is their single largest need.
- Associate degree level programs that would produce multi-craft maintenance mechanics. Employers in all sectors identified individuals trained in this area to be a critical need.
- Baccalaureate degree holders in selected allied health fields, particularly occupational therapy and physical therapy.
Masters level programs that would train physician extenders (nurse practitioners, physicians' assistants, etc.), nurse educators, and social workers. The needs for individuals with such credentials were expressed in the strongest of terms, on a par only with the statements regarding maintenance mechanics.

Access to an Ed.D. program in the southern part of the region, logically at Stephen F. Austin.

Opportunities to access a wide variety of continuing education courses—from masters programs in engineering to short courses required to meet continuing certification requirements in numerous fields—without having to go to Dallas, Houston, or other geographically distant locations.

Northeast Texas has certain characteristics that create special problems for the delivery of many of these needed programs (as well as other services such as health care). The population of the region is large enough to create some demand for a wide variety of services, not so large as to create a critical mass of demand sustainable on an ongoing basis, and scattered enough to make delivery of these services in a single location problematic. This particular condition plays a critical role in shaping the recommendations that emerge from the study.

Some of the needs can be met by addition of selected programs, specifically:

• certificate programs in nurses aide/home health aide, etc.
• associate degree programs in Multi-Craft Maintenance Mechanics
• a baccalaureate program in Physical Therapy
• a baccalaureate program in Production Planning and Management
• masters programs in Social Work
• masters programs in "Physician Extenders"—Nurse Practitioners, PA's, etc.
• masters programs for Nurse Educators
• a masters program in "Leadership"
• additional doctoral programs in Education.

Response to most of the needs identified, however, will require that the institutions of the region seek entirely new ways of providing services. The central recommendation of the report is that primary attention be given to creation of a capacity in northeast Texas that will allow delivery of educational opportunities in a wide range of programs to non-traditional students through use of non-traditional delivery systems. The recommendations suggest that:

• Each college in the region functions as an Educational Access Center.

• Appropriate facilities be created at each college to allow them to fulfill this role. Particular attention should be given to facilities that allow use of interactive video, a technology that allows students to see and be seen by, hear be heard by, the faculty
member, regardless of where that faculty member is physically located.

- These facilities be linked together and be the focal points of rural area networks, designed to utilization by health care providers and other potential users in the community.

Through this particular strategy, the institutions in the region can provide superior services to their clientele in Northeast Texas and maximize the return on investment made on the educational delivery system in the region. They can also serve as a demonstration site and provide leadership in the development of mechanisms by which other rural areas of the state can gain the benefits of postsecondary education and access to other services that are now beyond their reach.
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II. Project Design and Approach

A. The Dimensions of Need

Regional needs for higher education can be viewed as consisting of four distinct components, each reflecting the requirements and perspectives of different clientele for the services provided by colleges and universities. These four components of demand are as follows:

1. Recent high school graduates. This is the 18-24 year old group of students normally considered to be the "traditional" college student body. Such students typically have few family and employment responsibilities. As a consequence, they are able to devote more time to educational pursuits and are much more likely to attend college as full-time students than are their older counterparts. Further, these students are more free to seek educational opportunities at institutions outside their region.

While ostensibly free to leave home to obtain their education, many traditional, college-aged students do not (and, in many cases, would not) do so. In many cases, the decision to remain close to home is rooted in economics; they simply cannot afford to pay room and board as well as tuition and the other direct costs of college attendance. In many other cases, the choice reflects attachments to family and friends and a great reluctance to deal with the unfamiliar. Whatever the underlying conditions, many students seek their educational opportunities close to home. Their educational choices, then, are limited to the educational programs available in the region. As will be seen later, these choices are lacking in many respects in Northeast Texas.

2. The adult population. Adults, particularly those individuals in the age range 25-45, represent a separate and distinct clientele for higher education. These individuals seek a wide array of services from colleges and universities—courses that help them acquire the most basic skills of reading, writing and computation that should have been mastered in the elementary and secondary grades but weren't, programs that will provide skills that will help them get a job or to make career changes, and courses that will help ensure that they are current in their fields and will enhance their job performance and likelihood of advancement.

Most such individuals already are in the workforce in some capacity. Further, they have reached the point in their lives where many have families and most have responsibilities of other kinds in the communities in which they live. These conditions mean that most of these students cannot attend college full-time; there are too many competing demands on their time. It also means that whatever educational opportunities that are afforded these individuals must be provided within reasonable commuting distances of their homes. These individuals are not free to pull up stakes and seek their education elsewhere.
3. **Employers.** A third distinct clientele for the colleges and universities in Northeast Texas are the employers in the region. They see needs for higher education from three different perspectives. First, employers seek a source of individuals who have acquired the knowledge and skills that make them qualified to be hired by companies seeking new employees. Second, they need sources of continuing education that will help ensure that employees are up to date in knowledge required by their jobs and that prepare these individuals to take on new roles within the company. The availability of such continuing education opportunities is frequently an important consideration in companies’ abilities to recruit individuals from outside the region and move them to Northeast Texas. This is particularly true in engineering and other technical areas, fields that change rapidly and in which failure of employees to keep learning quickly reflects negatively on the employee and the employer.

Third, employers view the availability of certain (particularly graduate) programs as part of the community asset that enhances their ability to do business in that community. The availability of such graduate programs is frequently an important consideration in companies’ abilities to recruit individuals from outside the region and move them to Northeast Texas. In some cases (particularly with engineers) they will normally hire from a wide range of universities, but need graduate programs as part of the package if their recruitment efforts are to be successful. Increasingly, they need to be able to offer access to graduate programs to spouses in order to hire the employees they really want.

Again, the clientele for such programs are such that it is necessary in most cases to bring the programs to the student, not try to take the students to the program.

4. **The communities of Northeast Texas.** Finally, the communities that are located in Northeast Texas represent an important constituency for the colleges and universities in the region. This constituency is perhaps the hardest of all to serve.

Many of these communities have suffered severe reversals in the past few years. The severe downturn in the oil industry hit cities like Kilgore and Tyler hard and the ripples were felt in places like Lufkin and Lone Star where major employers produce products used in the oil and gas industry. Cutbacks in defense spending have hit cities like Texarkana particularly hard.

These conditions have resulted not only in the elimination of many jobs in these communities, but in the elimination of high-wage jobs. In their wake have come many low skill, low-wage jobs in the poultry processing and wood products industries and in such service occupations as corrections (prisons under both federal and state jurisdictions are springing up throughout the region).

Community leaders are looking to colleges and universities to play an important role in maintaining and enhancing the viability of their communities and in protecting a way and quality of life to which residents of the region are deeply attached—a way of life.
that revolves significantly around having a safe, clean natural environment.

This is a particularly difficult, but yet critically important, constituency to serve. History suggests that it is extraordinarily difficult for colleges and universities to lead an economic revival in a region. But they can be key players. As a result, this is an area that received considerable discussion and thought in the course of the study.

B. Approach to the Study

The study encompassed compilation and analysis of data relative to the potential educational needs of these different groups of clients of higher education in Northeast Texas. To gain insights into the potential education needs of recent high school graduates and adults in the region, data analyses of various kinds were performed. The analyses included:

- comparisons of college participation rates and patterns of high school graduates in Northeast Texas with similar rates and patterns elsewhere in Texas.
- comparisons of rates of enrollment of part-time adult students in Northeast Texas with similar rates elsewhere in Texas.
- comparisons of levels of educational attainment of the adult population of Northeast Texas with those in other parts of the state.
- an analysis of the array of educational opportunities available—and not available—in Northeast Texas.

The approach of inferring educational needs from such comparative, behavioral statistics rather than attempting to estimate need from data gathered directly from the potential students (through questionnaires, focus groups, or other means) was chosen because of the notorious unreliability of data gathered directly from the intended "customers." Experience indicates that responses to questions about intent to enroll in offered courses vary so greatly from actual course-taking behavior as to render the survey results meaningless. On the other hand, comparisons of enrollment patterns and other "behavioral" data provide meaningful insights into educational needs and opportunities in the region.

Such approaches work much less well in ascertaining the needs of employers and communities and the capacities of regional institutions to respond to those needs. In these arenas, there is no substitute for in-depth conversations with educators, employers, and community leaders. To this end, NMSI staff:

- conducted site visits to each of the fourteen public institutions in Northeast Texas and engaged in a day-long series of discussions about the institution, its current activities and programs, and plans for future activity (see Appendix A for a list of interviewees).
• interviewed, one-on-one and in small groups, different employers in the region. These employers were chosen as representative of the various sectors of the economy, large and small, public and private sector, in the region. These individuals were asked questions about the needs of their communities as well as of their organizations. (The individuals interviewed as representative of employers are listed in Appendix B. The general topics covered in the interviews are listed in Appendix C.)

• interviewed leaders of local economic development groups and staff of Chambers of Commerce in several cities (see Appendix D).

Through these interviews, NMSI staff gathered a wealth of information about, and important insights into, both the region itself and the unmet educational needs of the region.

The data and information gleaned from these various activities provided a rich base from which to proceed with analyses intended to characterize the region and to shed light on unmet educational needs. The findings and observations arising as a result of these analytic activities are presented in the following section of this report.
III. Observations about Northeast Texas

A. The State of Texas as Context

In order to interpret the data about Northeast Texas in a meaningful way, it is necessary to develop some understanding of the context within which the underlying questions reside—to develop the frame of reference of the state as a whole, particularly as that frame of reference pertains to higher education and related factors. While this portion of the analysis was not pursued at great length, several important factors emerge immediately:

- Texas has a population with a very different age distribution than that of the U.S. as a whole; its population has proportionately more younger people and proportionately few older people than the U.S. (Figure 2).

- The Texas population is projected to grow rapidly. The estimates (made by the staff at the Texas Data Center) vary depending on the assumptions made about the rates of migration of individuals into the state. Using even the lowest assumed rate of migration, the state's population is likely to increase in excess of 40% between 1990 and 2020. At the higher assumed rate of migration, the increase would be about 85% in that same period.

- The educational attainment levels of the adult population of Texas—those 25 years of age and older—are distinctly different from those of the total U.S. Texas has a significantly greater proportion with less than a high school education, but a significantly smaller proportion that has high school as their highest level of educational attainment. Interestingly, a higher proportion of Texas residents have their baccalaureate degrees than is the case nationally, while a smaller proportion has associate, masters, and doctoral and first professional degrees (Figure 3).

- Texas' colleges and universities produce significantly fewer graduates at all levels (on a per capita basis) than do colleges and universities nationally. To reach the national average, Texas institutions would have to produce 45% more associate degrees, 22% more baccalaureate degrees, 23% more masters degrees, and 14% more doctorates (Figure 4). When compared to the rest of the 10 most populous states in the U.S., Texas still fares relatively poorly. Texas is 6th in the ten in certificates awarded on a per capita basis, 9th in associates, 7th in baccalaureates, 7th in masters, 7th in doctorates, 7th in first professional degrees, and 9th overall (Table 1).

- While Texas has made great strides in reducing the dropout rates in the public schools (7-12 grade longitudinal dropout rates decreased from 34% to less than 21% in the period 1987-88 to 1991-92), the fact that more than 50,000 youngsters drop out of school each year means that the job is far from done. According to the Texas Education Agency 1993-95 State Plan to Reduce the Dropout Rate (page 9),
Figure 2
AGE DISTRIBUTION OF POPULATION
TEXAS vs U.S., 1990

Source: U.S. Census, 1990

Figure 3
EDUCATIONAL ATTAINMENT OF POPULATION,
AGE 25 AND OLDER
TEXAS vs U.S., 1990

Source: U.S. Census, 1990
Figure 4

NUMBER OF DEGREES GRANTED PER 10,000 POPULATION
TEXAS vs. U.S., 1990

Table 1
Ten Most Populous States

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<tr>
<th>State</th>
<th>Cert</th>
<th>Assoc</th>
<th>Bacc</th>
<th>Mast</th>
<th>Doc</th>
<th>1st Prof</th>
<th>Total</th>
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<td>Texas</td>
<td>18.95</td>
<td>14.69</td>
<td>38.0</td>
<td>11.63</td>
<td>1.46</td>
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<td>California</td>
<td>29.54</td>
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<td>Florida</td>
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<td>31.93</td>
<td>32.44</td>
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<td>14.23</td>
<td>1.85</td>
<td>3.05</td>
<td>126.33</td>
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Texas Rank: 6, 9, 7, 7, 7, 7, 7, 9
"Hispanic students are 2.2 times more likely to drop out of school than white students. African American students are almost two times (1.9) more likely to drop out of school than white students."

These factors taken together suggest several things for Texas and its (public and private) system of higher education. They suggest that Texas is likely to continue to experience growth in demand for higher education (the Western Interstate Commission for Higher Education in its document High School Graduates, Projections by State, 1992-2009, projects an increase in high school graduates of 35%—from 174,000 to 235,000—over the 17-year period). These facts also indicate, however, that Texas will have to enroll proportionally even more students in its higher education system if the state is to gain parity with the rest of the country. The relatively young population of the state provides Texas with a wonderful opportunity to train its citizens and its workforce for the 21st century. This same condition, however, will place serious economic strains on an already heavily burdened public Treasury.

There is another characteristic of Texas that cannot be ignored; in spite of its great size and rural traditions, it is a heavily urbanized state. In 1990, 83.4% of the state’s population lived in 11 (of 254) counties with populations that exceeded 250,000. These 11 counties had a combined population of 14.17 million; the other 243 counties had a combined population of but 2.82 million.

While the population of the state is heavily concentrated in a few metropolitan areas, the public higher education system is less so. Figure 5 indicates that the higher education institutions located in these 11 metropolitan counties award degrees of all kinds in much smaller proportions than their populations would suggest. This reflects the fact that Texas has spread its educational institutions across the state in ways that make them more accessible to students in non-metropolitan areas.

With these factors as context, it is productive to move on to an analysis of pertinent data about Northeast Texas.

B. Northeast Texas

The thirty-six counties that comprise the region being labeled as Northeast Texas are a part of a larger—but still ill-defined—area generally regarded as East Texas. Bob Bowman, in his book entitled Plant Watermelons on my Grave and Let the Juice Ooze Down (A Handbook for Living in East Texas), defines East Texas as being “anywhere there’s a pine tree” (page 11). He then proceeds to provide numerous geographic definitions of the region, most of which extend the region to the west (a little) and to the south (quite a

---

2 Those counties were Harris, Dallas, Bexar, Tarrant, El Paso, Travis, Hidalgo, Nueces, Denton, Collin, and Cameron.
little) of the region identified by enumerating the thirty-six counties specified as the region to be studied in the course of this project.

This point is made partially to explain our selection of the label we have chosen to apply to the region. More importantly, however, the point is made to call attention to the fact that "Northeast Texas" (or "East Texas") is a region only in the loosest sense. The thirty-six counties do not have a history of common action united around common purpose. As a consequence, there are few mechanisms in place to initiate and sustain cooperative endeavors. Indeed, it is more useful to recognize the geographic area encompassed by the study as a large corner of a very large state that:

- is different from the rest of Texas in some critically important ways
- contains cities, or groups of cities, that serve distinctly different subregions within Northeast Texas--Lufkin/Nacogdoches, Texarkana, Tyler/Kilgore/Longview/ Marshall, Paris/Mount Pleasant/Commerce/Greenville. These cities are sufficiently far apart, sufficiently different in their economies, and sufficiently well established as centers of commerce and delivery of services (e.g., health care) that it would be counterproductive to ignore their independent existences and to focus solely on the region.

These observations suggest the necessity of investigating the characteristics and needs of the region as a whole, while understanding that responses to these needs must be developed in full recognition of the different circumstances of the various sub-regions. Observations about pertinent characteristics of Northeast Texas and findings are presented in the balance of this chapter. Findings regarding educational needs in the region are presented in Chapter IV.

C. Demographics

With regard to its population, Northeast Texas has several characteristics that distinguish this region from the remainder of the state. Chief among them are:

- Northeast Texas is both more black and more white than the rest of the state, a condition that can be achieved only because the region has such a small Hispanic population relative to the rest of Texas. While the Hispanic population is growing in Northeast Texas (especially in the southern counties in the study area), it is very much smaller than the populations of other racial groups in the region and of Hispanics in other parts of Texas (Figure 6).

- The population of Northeast Texas is expected to grow at a much slower rate than that of the state as a whole. Under the most liberal assumptions about migration, Northeast Texas is projected to grow at a rate slightly more than half as fast as the
Figure 5

PROPORTION OF DEGREES GRANTED BY INSTITUTIONS IN THE 11 MOST POPULOUS COUNTIES

Source: NCES, IPEDS, 1994-96
U.S. Census, 1990

Figure 6

ETHNICITY—NORTHEAST TEXAS vs. THE REST OF THE STATE 1990

Source: U.S. Census, 1990
state as a whole is projected to grow under the most conservative assumptions (compare the State low migration line with the Northeast Texas high migration line in Figure 7). The portion of the region expected to grow most rapidly is that closest to Dallas, Kaufman County, for example.

Figure 7

RATES OF POPULATION GROWTH
NORtheast Texas AND STATE TOTAL, 1990-2020

Source: Texas Data Center

- The adult population of Northeast Texas (those 25 years of age and older) is significantly less well educated than the adult population of the rest of Texas. The population of Northeast Texas contains a substantially higher proportion of individuals who have no more than a high school education and a substantially smaller proportion that is college-educated to any level (Figure 8). This fact, coupled with the fact that the region is not likely to grow rapidly, suggests that, if an educated workforce is to be created in the region, it will be necessary to enhance the education levels of those individuals already in the region and in the labor pool.

- The population of Northeast Texas is much less geographically concentrated than that of the rest of the state. Northeast Texas has no large metropolitan areas; its population is more uniformly distributed across the region than is the case in much of Texas. This condition is particularly evident when the population concentration of Northeast Texas is compared to that of South Texas (Figure 9).

- The region is not sparsely populated. While the region has no large metropolitan areas (counties with populations greater than 250,000), it contains nearly half (46%) of the state’s population that resides outside such metropolitan counties. This means that there are 207 counties in the state that have a combined population just slightly greater than the population of the 36 counties in Northeast Texas.
Figure 8

EDUCATIONAL ATTAINMENT OF POPULATION, AGE 25 AND OLDER
TEXAS vs U.S., 1990

Source: U.S. Census, 1990

EDUCATIONAL ATTAINMENT OF POPULATION, AGE 25 AND OLDER
NORTHEAST TEXAS vs REST OF TEXAS, 1990

Source: U.S. Census, 1990
Figure 9

DISTRIBUTION/CONCENTRATION OF POPULATION BY REGION

Number of Counties

Source: U.S. Census, 1990
Note: The East Texas region has 38 counties. South Texas 41

DISTRIBUTION/CONCENTRATION OF POPULATION BY REGION

Source: U.S. Census, 1980
Note: The East Texas region has 38 counties. South Texas 41
These features of population density and distribution are at the heart of problems associated with delivering postsecondary education (and many other kinds of services, such as health care) to the residents of Northeast Texas. The population is:

- large enough to create some demand for a wide array of services
- not so large as to create a critical mass of demand sustainable on an ongoing basis
- scattered enough to make delivery of these services in a single location unproductive in many cases.

This particular condition affects many of the other findings of the report and plays a critical role in shaping the recommendations contained in this report.
D. The Economy

The economy of Northeast Texas has numerous characteristics that distinguishes it from much of the rest of Texas and that affect the kinds of educational services needed in the region. Among these characteristics are:

- Northeast Texas is more heavily engaged in manufacturing than the rest of the state (18.6% vs. 14.1%). It is also relatively more involved in agriculture (4.0% to 2.7%) than the rest of the state. The Northeast Texas economy employs relatively fewer individuals in Finance, Insurance, and Real Estate and in Wholesale Trades. This pattern, except for the manufacturing component, is very consistent with the non-urban character of the region. Both financial services and wholesale/distribution organizations typically locate in major urban areas (Table 2).

- Residents of Northeast Texas are much less likely to be engaged in highly skilled jobs—such as managers, engineers and scientists, and technicians—than their counterparts elsewhere in Texas. The exception is in health care related occupations where they are more likely to be employed in positions involving treating patients or doing related technical work (but not in positions such as physicians and dentists involving the diagnosis of patients’ needs) (Table 3).

- Much of the industry in the region is natural resource based—oil, gas and timber—either directly or indirectly through companies that provide goods and services in support of these primary enterprises. These industries have been primarily “extractive” in nature with relatively little attention to processes that add value to the raw materials and turn them into finished products. Recently, poultry (chicken) processing has emerged as a major industry.

- In the past decade, those industries that have employed many people in high-wage jobs—in oil and gas production, the manufacture of oil field equipment and supplies, and defense—have suffered severe reversals and have reduced employment considerably.

- Most of the major employers are branch operations of larger enterprises whose headquarters are located outside Texas. While there are exceptions—Temple-Inland and Lufkin Industries, both in the Lufkin area, being primary among them—this pattern of having control over major economic factors in the region being exercised from far away is pervasive.

Again, there are several features of this overall economic picture that bear directly on the kinds of higher education needed and the prospects for economic development in the region. Features of particular import are that:
<table>
<thead>
<tr>
<th>Industry of Employed Persons - 1990</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(16 Years and Over by Region, State)</td>
</tr>
<tr>
<td><strong>Northeast Texas</strong></td>
<td><strong>Remainder of State</strong></td>
</tr>
<tr>
<td>Agriculture</td>
<td>21,510</td>
</tr>
<tr>
<td>Mining</td>
<td>11,486</td>
</tr>
<tr>
<td>Construction</td>
<td>36,451</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>98,904</td>
</tr>
<tr>
<td>Trans/Comm</td>
<td>38,062</td>
</tr>
<tr>
<td>Wholesale</td>
<td>21,695</td>
</tr>
<tr>
<td>Retail</td>
<td>92,951</td>
</tr>
<tr>
<td>F.I.R.E.</td>
<td>24,714</td>
</tr>
<tr>
<td>Services</td>
<td>160,716</td>
</tr>
<tr>
<td>Public Administration</td>
<td>26,623</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>533,112</td>
</tr>
</tbody>
</table>

Source: Bureau of the Census, 1990
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Northeast Texas</th>
<th>Other Texas</th>
<th>State Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exec/Admin</td>
<td>8.74</td>
<td>12.53</td>
<td>12.30</td>
</tr>
<tr>
<td>Engrs &amp; Sci</td>
<td>1.21</td>
<td>2.89</td>
<td>2.77</td>
</tr>
<tr>
<td>Health Diag</td>
<td>0.52</td>
<td>0.66</td>
<td>0.65</td>
</tr>
<tr>
<td>Health Treating</td>
<td>1.84</td>
<td>1.77</td>
<td>1.78</td>
</tr>
<tr>
<td>Teachers/Couns</td>
<td>5.49</td>
<td>5.38</td>
<td>5.40</td>
</tr>
<tr>
<td>Health Tech</td>
<td>1.29</td>
<td>1.14</td>
<td>1.15</td>
</tr>
<tr>
<td>Other Tech</td>
<td>1.57</td>
<td>2.84</td>
<td>2.75</td>
</tr>
<tr>
<td>Precision Prod</td>
<td>13.82</td>
<td>11.55</td>
<td>11.74</td>
</tr>
<tr>
<td>All Other</td>
<td>65.52</td>
<td>60.99</td>
<td>61.50</td>
</tr>
<tr>
<td>Total Employees</td>
<td>533,102</td>
<td>7,101,177</td>
<td>7,634,279</td>
</tr>
</tbody>
</table>
• The economy, especially the manufacturing sector, is of a type that relies heavily on unskilled and semi-skilled workers. Much of the manufacturing involves processing of either timber or poultry, neither of which requires large cadres of highly skilled employees. With a workforce of this nature, primary attention necessarily focuses on employees' acquisition of basic skills.

• To the extent that significant levels of technology are involved, the technology is found in the manufacturing processes rather than in the products. Thus, to the extent that skilled employees are needed in the workplace, the skills needed are those associated with installing, reconfiguring, and maintaining the sophisticated equipment utilized in many of the plants in the region.

• The absence of jobs for individuals requiring advanced levels of education suggests an explanation for the low proportions of highly educated people in the region's population—if they get a baccalaureate degree they have to leave the region to use it. Thus higher education provides graduates with economic and geographic mobility; higher education at the baccalaureate level is an "exported commodity" in the region.

• The industry in the region is of a type that does not foster spin-off enterprises. Where there are large aggregations of highly educated employees (such as Texas Eastman) they are in industries that are heavily capital-intensive. The chemical/petrochemical industries, unlike computer software and other high technology industries, are not conducive to situations in which employees leave a parent company and create new companies in a related area. The nature of the indigenous industry makes it difficult to use them as springboards to the economic development of the broader region.

• One emerging industry identified in the course of the project was plastics forming, an industry centered in the Tyler-Jacksonville-Athens area. There is also a nascent biotechnology industry in the Tyler area.

• The industry in the region can be characterized as predominantly consisting of companies that extract and process raw materials. There is little history of "inventing" products. As a consequence, there are not large numbers of individuals in the region who are experienced at creating new products and who could be expected to contribute to the economic diversification of the region.

E. Higher Education in Northeast Texas

Public higher education in Northeast Texas is delivered by fourteen institutions—eight community/junior colleges, two comprehensive universities with very limited doctoral work, two upper-division/masters degree granting institutions, a technical college, and a health sciences center that is heavily engaged in research and patient care but offers no degrees of its own. Several points need to be made about the array of educational programs offered by these institutions.
• The number of awards made at the pre-baccalaureate level relative to number of high school diplomas granted is much higher in Northeast Texas than in the rest of the state (Figure 10).

• Within the realm of certificates and associate degrees, it is noteworthy that Northeast Texas institutions are
  - relatively high in allied health science fields at the associate level but low in certificates in these same fields
  - high in construction trades at the certificate level, but award no associate degrees in these fields
  - extraordinarily high in the number of education degrees awarded at the associate level
  - particularly low in the skilled trades (mechanics and repairers) at both levels
  - low in computer sciences/data processing at both levels (Figures 11a and 11b).

**Figure 10**

Proportion of Texas' Degrees Awarded by Northeast Texas Educational Institutions

Source: Texas Education Agency, 1991-92
NCES, IPEDS, 1990-91
Figure 11A
PROPORTION OF TEXAS AWARDS BY NORTHEAST TEXAS COLLEGES

Source: NCES, IPEDS, 1990-91

Figure 11B
PROPORTION OF TEXAS AWARDS BY NORTHEAST TEXAS COLLEGES

Source: NCES, IPEDS, 1990-91
- Relative to number of high school graduates, Northeast Texas universities award slightly fewer baccalaureate degrees than institutions elsewhere in Texas (Figure 10).

- In the academic fields at the baccalaureate level, Northeast Texas institutions appear weak in the sciences of all kinds and high in math and the arts. They are particularly high in "interdisciplinary studies," typically a "general studies" degree. The presence of large numbers of such degrees suggests the absence of discipline-specific programs at the institutions that rely heavily on such programs (Figure 12a).

- In the applied fields at the baccalaureate level, regional universities are strong in such fields as education, protective services (criminal justice, etc.) and computer science. They graduate relatively few students in the health-related areas. Most noticeable is the fact that there are no programs in engineering available in the region. The engineering technology degrees reflected in the data are almost totally 2+2 degrees in which the technology courses are provided by the community colleges and general education courses are provided at the baccalaureate institutions. There are no technologically advanced baccalaureate programs available in any of the public universities in the region (Figure 12b). The only technologically advanced baccalaureate program available in the region is at Le Tourneau University, a private university in Longview, Texas with an enrollment of approximately 1,500 students.
Figure 12A

PROPORTION OF TEXAS' BACCALAUREATE DEGREES AWARDED BY NORTHEAST TEXAS UNIVERSITIES, 1991

- Total
- Letters
- Life Sciences
- Math
- Interdisc. Studies
- Physical Sciences
- Psychology
- Social Sciences
- Arts
- All Others

NET TX Share of HS Grads

Source: NCES, IPEDS, 1990-91

Figure 12B

PROPORTION OF TEXAS' BACCALAUREATE DEGREES AWARDED BY NORTHEAST TEXAS UNIVERSITIES, 1991

- Total
- Agriculture
- Arch. & Urban Design
- Business
- Communications
- Computer Science
- Education
- Engineering
- Engineering Tech
- Allied Health
- Health Science
- Protective Services

NET TX Share of HS Grads

Source: NCES, IPEDS, 1990-91

Academic Fields

Applied Fields
• Northeast Texas institutions produce masters degrees at a level very much in keeping with the proportion of the state's high school graduates produced in the region (Figure 10).

• Again the institutions are low in the sciences and notably high in interdisciplinary studies. The comment made above about the implications of large numbers of interdisciplinary degrees applies here as well (Figure 13a).

• At the master's level, again, Northeast Texas institutions are particularly low in the health sciences. No engineering programs are available in the region. The very large proportion of engineering technology degrees reflected in the data are indicative of the fact that it is an unusual degree offered at only one other institution in the state. The program prepares students to teach in vocational education programs and is not technically advanced. The statement about baccalaureate programs indicating that no technologically rich programs exist in the region applies at the master's level as well (Figure 13b).

• There are only two types of doctoral programs available in the region—programs in education at East Texas State and a small forestry program at Stephen F. Austin. There are no first-professional degree programs anywhere in the region. The closest the region comes to having the latter types of programs is the medical residency program operated by the UT Health Sciences Center at Tyler (Figure 10).

These data combine to paint a picture of a region that is rich in programs that would normally be provided by institutions that have emerged from strong traditions as junior colleges and normal schools. In neither case have they completed the evolution to comprehensive community colleges or to comprehensive universities. This is revealed in the relative absence of programs in the more sophisticated skilled trades (at the associate level) and in the sciences, technologies, and health fields at the baccalaureate and masters levels.

This history is also revealed in the relative insularity of the institutions. Most of the institutions are not practiced at developing close working relationships with employers and at devising programs designed to meet particular local needs.

Finally, the picture is one of a region that is almost devoid of opportunities for anyone with a technical education in any field—engineering, science, health professions—to obtain graduate level courses or to otherwise take courses needed to stay current in that field.

F. The Communities

As noted previously, the communities rather than the larger region define the needs and ambitions of Northeast Texas. There are regional health care facilities in each of the four
Figure 13A

PROPORTION OF TEXAS' MASTER'S DEGREES AWARDED BY NORTHEAST TEXAS UNIVERSITIES, 1990-91

<table>
<thead>
<tr>
<th>Academic Fields</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Letters</td>
<td></td>
</tr>
<tr>
<td>Life Sciences</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td></td>
</tr>
<tr>
<td>Interdisc. Studies</td>
<td></td>
</tr>
<tr>
<td>Physical Sciences</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
</tr>
<tr>
<td>Social Sciences</td>
<td></td>
</tr>
<tr>
<td>Arts</td>
<td></td>
</tr>
<tr>
<td>All Others</td>
<td></td>
</tr>
<tr>
<td>NET TX Share of HS Grads</td>
<td></td>
</tr>
</tbody>
</table>

Source: NCES, IPEDS, 1990-91

Figure 13B

PROPORTION OF TEXAS' MASTER'S DEGREES AWARDED BY NORTHEAST TEXAS UNIVERSITIES, 1990-91

<table>
<thead>
<tr>
<th>Applied Fields</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Business</td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
</tr>
<tr>
<td>Engineering Tech</td>
<td></td>
</tr>
<tr>
<td>Allied Health</td>
<td></td>
</tr>
<tr>
<td>Health Sciences</td>
<td></td>
</tr>
<tr>
<td>Public Affairs</td>
<td></td>
</tr>
<tr>
<td>NET TX Share of HS Grads</td>
<td></td>
</tr>
</tbody>
</table>

Source: NCES, IPEDS, 1990-91
major subregions identified above. The service regions of these facilities and the services that are associated with them do much to define the boundaries of civic influence. These communities are very much a product of their history. While they have pine trees in common, they found very different directions in their other endeavors. Tyler and the other communities along I-20 are products of the oil and gas business and the petrochemicals associated with that industry. Lufkin is the heavy manufacturing center of the region and became so supplying equipment to the oil fields. Texarkana was heavily tied to the defense industry. The northwest quadrant of the study area is, perhaps, the least well defined. Paris and Mount Pleasant are still heavily dependent on the processing of agricultural and forest products. Cities in the western part of the region (e.g., Commerce and Greenville) are increasingly being caught in the orbit of the Dallas metropolitan area.

All of these communities have suffered because of the decline in the major industries on which their economies were built. All are struggling to regain economic vigor. To outside observers, it was interesting to note the restraint with which most communities were pursuing alternatives. There is great respect for the quality (and way) of life in these communities and their leaders were revealed as being particularly sensitive to the need to balance the need for economic expansion with the requirement that things not change too much. When push comes to shove, the quality of life will win more often than not. This condition limits both the expectations for, and likelihood of, change on a significant scale.
IV. The Education Needs of Northeast Texas

Against this backdrop it is possible to make informed judgments about the educational needs of the individual, corporate, and civic citizens of Northeast Texas. In this chapter, we identify needs from the perspectives of each of the distinct client groups identified previously--recent high school graduates, the adult population, employers, and the communities in the region.

A. Recent High School Graduates

In describing the approach to the project, we noted that the assessment of the higher education needs of recent high school graduates was pursued through analysis of available data rather than through collection of data about perceived needs directly from these potential college students. These analyses reveal the following:

- Mirroring the population of the region, Northeast Texas' high school graduates are proportionately both more white and more black than the high school graduates of the state as a whole (Figure 14). While the proportion of blacks is higher in Northeast Texas, the metropolitan areas of Houston and Dallas-Fort Worth have far larger numbers of black high school graduates than does Northeast Texas.

- In reviewing the patterns of participation of these high school graduates in either two- or four-year colleges, several points are made apparent. Some of these points are particularly notable when Northeast Texas is compared with South Texas\(^3\), a region chosen for comparative analysis because of the recent attention to issues of access to educational opportunity.

  - the overall proportions of high school graduates to full-time college freshmen are very similar for all regions, Northeast Texas, South Texas, and the entire state (see the bottom bar on Figure 15)

  - significantly more (percentage-wise) Northeast Texas students go to two-year institutions than is the case in either South Texas or statewide while a considerably smaller percentage enter four-year institutions

  - very few students leave their home regions to attend two-year colleges

  - a substantially lower percentage of Northeast Texas students who attend four-year colleges do so within their region than is the case for South Texas students (Figure 15).

\(^3\) Defined as the 41 counties that were the plaintiffs in the case involving higher education opportunities in South Texas.
Figure 14

ETHNICITY OF 1991-92 TEXAS HIGH SCHOOL GRADUATES

Source: Texas Education Agency

Figure 15


Source: Texas Education Agency
Texas Higher Education Coordinating Board

30
• While a significantly larger proportion of Northeast Texas students start college at community colleges, the region's production of baccalaureate degrees is very much proportional to the number of high school students graduated in the region (recall Figure 10). One explanation is that proportionately more students transfer into the four-year institutions in the region. The data in Table 4 indicate that 6788 (9.8%) of the total 69,143 community college transfers go to the four four-year institutions in the region. This compares to the approximate 8% share of high school graduates produced in the region. The data in Table 4 also reveal that both ETSU-Texarkana and UT-Tyler receive proportionately fewer male transfer students than most other institutions in the state. This raises the question as to whether the programs offered at these institutions are of a nature to attract a male student body (since teaching, nursing, and, increasingly, accounting are female-dominated professions).

• Because African Americans represent the largest minority group in Northeast Texas, special attention was given to their participation rates and patterns. These analyses resulted in the following findings:

- Blacks from Northeast Texas participate in college—either two-year or four-year—at substantially lower rates than their white counterparts. Those that do go to four-year colleges are less likely to attend regional institutions (or Texas A&M or UT-Austin) and much more likely to attend another four-year institution outside the region (Figure 16).

- The fact that the preferred out-of-region institution is Prairie View A&M confounds the interpretation. It could mean either that students were seeking the kind of environment represented by an historically black college or that they were seeking programs not offered in Northeast Texas universities (Prairie View has an engineering program, for example) or a combination of the two (Table 5).

- Northeast Texas blacks attend college at lower rates than blacks elsewhere in Texas. At lower rates, they exhibit the typical Northeast Texas behavior of attending two-year colleges in larger proportion and four-year institutions in smaller proportions (Figure 17).

• Viewed on an intra-regional (county-by-county basis), it becomes apparent that Northeast Texas high school graduates have a propensity for attending colleges close to home. As a consequence, commuting routes also become important (Figure 18).

• The participation rates for blacks approximates that for whites in counties predominantly served by two-year institutions. Rates are much lower in those areas primarily served by four-year institutions (Figure 19). More detail on geographic attendance patterns can be found in Appendix E.
### Table 4

Undergraduates\(^1\) Who Transferred from Public Community Colleges to Public Universities, Fall 1992

<table>
<thead>
<tr>
<th>Institution</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Texas State University</td>
<td>713</td>
<td>921</td>
</tr>
<tr>
<td>East Texas State University-Texarkana</td>
<td>170</td>
<td>387</td>
</tr>
<tr>
<td>Lamar University - Beaumont</td>
<td>440</td>
<td>546</td>
</tr>
<tr>
<td>Midwestern State University</td>
<td>195</td>
<td>274</td>
</tr>
<tr>
<td>Stephen F. Austin State University</td>
<td>1397</td>
<td>1431</td>
</tr>
<tr>
<td>Prairie View A&amp;M University</td>
<td>162</td>
<td>163</td>
</tr>
<tr>
<td>Tarleton State University</td>
<td>612</td>
<td>579</td>
</tr>
<tr>
<td>Texas A&amp;M International University</td>
<td>190</td>
<td>439</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>3051</td>
<td>2085</td>
</tr>
<tr>
<td>Texas A&amp;M University-Galveston</td>
<td>109</td>
<td>74</td>
</tr>
<tr>
<td>Texas A&amp;M University-Corpus Christi</td>
<td>500</td>
<td>578</td>
</tr>
<tr>
<td>Texas A&amp;M University-Kingsville</td>
<td>373</td>
<td>319</td>
</tr>
<tr>
<td>West Texas A&amp;M University</td>
<td>489</td>
<td>693</td>
</tr>
<tr>
<td>Texas Southern University</td>
<td>224</td>
<td>457</td>
</tr>
<tr>
<td>Angelo State University</td>
<td>272</td>
<td>301</td>
</tr>
<tr>
<td>Sam Houston State University</td>
<td>1379</td>
<td>1459</td>
</tr>
<tr>
<td>Southwest Texas State University</td>
<td>2664</td>
<td>2246</td>
</tr>
<tr>
<td>Sul Ross State University</td>
<td>129</td>
<td>88</td>
</tr>
<tr>
<td>Sul Ross State University-Uvalde Center</td>
<td>45</td>
<td>142</td>
</tr>
<tr>
<td>Texas Tech University</td>
<td>1733</td>
<td>1140</td>
</tr>
<tr>
<td>Texas Woman's University</td>
<td>93</td>
<td>1669</td>
</tr>
<tr>
<td>The University of Texas at Arlington</td>
<td>2806</td>
<td>2551</td>
</tr>
<tr>
<td>The University of Texas at Austin</td>
<td>2321</td>
<td>2358</td>
</tr>
<tr>
<td>The University of Texas at Brownsville</td>
<td>375</td>
<td>685</td>
</tr>
<tr>
<td>The University of Texas at Dallas</td>
<td>1238</td>
<td>1233</td>
</tr>
<tr>
<td>The University of Texas at El Paso</td>
<td>933</td>
<td>1297</td>
</tr>
<tr>
<td>The University of Texas-Pan American</td>
<td>295</td>
<td>279</td>
</tr>
<tr>
<td>The University of Texas of the Permian Basin</td>
<td>259</td>
<td>572</td>
</tr>
<tr>
<td>The University of Texas at San Antonio</td>
<td>1725</td>
<td>1851</td>
</tr>
<tr>
<td>The University of Texas at Tyler</td>
<td>587</td>
<td>1182</td>
</tr>
<tr>
<td>University of Houston</td>
<td>2903</td>
<td>2724</td>
</tr>
<tr>
<td>University of Houston-Clear Lake</td>
<td>764</td>
<td>1353</td>
</tr>
<tr>
<td>University of Houston-Downtown</td>
<td>580</td>
<td>555</td>
</tr>
<tr>
<td>University of Houston-Victoria</td>
<td>138</td>
<td>360</td>
</tr>
<tr>
<td>University of North Texas</td>
<td>2975</td>
<td>2847</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>32905</td>
<td>36238</td>
</tr>
</tbody>
</table>

\(^1\) Students who have enrolled in 30 semester credit hours in the past six years at a public community or technical college.

Source: Texas Higher Education Coordinating Board.
Figure 16


Overall College Attending
Attending 4-Year
Attending 2-Year
Of those Attending 4-Yr
% in Region
% Texas A&M
% UT Austin
% Other 4-Yr
Of those attending 2-Yr.
% in Region
% Other Texas

Source: Texas Education Agency
Texas Higher Education Coordinating Board

Figure 17

PARTICIPATION OF HIGH SCHOOL GRADUATES AS FULL-TIME FRESHMEN

Source: Texas Education Agency
Texas Higher Education Coordinating Board
### Table 5

Where Black First-Time Freshmen From Northeast Texas Attend Texas Four-Year Institutions - 1992-93

<table>
<thead>
<tr>
<th>Institution</th>
<th>Blacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephen F. Austin State University</td>
<td>68</td>
</tr>
<tr>
<td>Prairie View A&amp;M University</td>
<td>57</td>
</tr>
<tr>
<td>East Texas State University</td>
<td>26</td>
</tr>
<tr>
<td>Sam Houston State University</td>
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<tr>
<td>Texas Southern University</td>
<td>17</td>
</tr>
<tr>
<td>University of Texas at Austin</td>
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</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>16</td>
</tr>
<tr>
<td>University of North Texas</td>
<td>14</td>
</tr>
<tr>
<td>University of Texas at Arlington</td>
<td>9</td>
</tr>
<tr>
<td>Texas Tech University</td>
<td>8</td>
</tr>
<tr>
<td>University of Houston-University Park</td>
<td>7</td>
</tr>
<tr>
<td>Lamar University-Beaumont</td>
<td>6</td>
</tr>
<tr>
<td>Southwest Texas State University</td>
<td>4</td>
</tr>
<tr>
<td>Texas A&amp;I University</td>
<td>3</td>
</tr>
<tr>
<td>Angelo State University</td>
<td>2</td>
</tr>
<tr>
<td>West Texas State University</td>
<td>1</td>
</tr>
<tr>
<td>Texas Woman's University</td>
<td>1</td>
</tr>
<tr>
<td>University of Texas San Antonio</td>
<td>1</td>
</tr>
<tr>
<td>University of Texas at Dallas</td>
<td>1</td>
</tr>
<tr>
<td>Sul Ross State University</td>
<td>1</td>
</tr>
<tr>
<td>Midwestern State University</td>
<td>1</td>
</tr>
</tbody>
</table>

Total                                               | 278    |
Figure 18

PARTICIPATION RATES OF NORTHEAST TEXAS HIGH SCHOOL GRADUATES IN TEXAS 2 & 4-YEAR COLLEGES

Source: Texas Education Agency
        Texas Higher Education Coordinating Board
Figure 19

PARTICIPATION RATES OF BLACK HIGH SCHOOL GRADUATES RELATIVE TO OVERALL PARTICIPATION RATES OF HIGH SCHOOL GRADUATES IN TEXAS 2 & 4-YEAR INSTITUTIONS

Source: Texas Education Agency
Texas Higher Education Coordinating Board

2-Year Colleges
4-Year Colleges
What does all this mean? The participation data along with the data about program availability presented in the previous section suggest several answers to that question. First, they indicate a sufficiency of opportunity to attend two-year colleges. However, the degree award data reveal that there are (too) limited opportunities in health-related areas at the certificate level (nurses aides, licensed vocational nurses, etc.) and in the skilled trade areas at the associate level. The strengths—and the limitations—of the two-year institutions in Northeast Texas are consistent with the origins of most of these colleges as junior colleges.

Second, these data reveal a dearth of opportunity at the baccalaureate level. Since the four-year institutions are well situated in or near the population centers of the four subregions within Northeast Texas, this shortage of opportunity implies an absence of certain programs rather than an absence of institutions at key locations in the region. The insufficiency of baccalaureate programs is particularly noticeable in such fields as:

- nursing and allied health
- social work
- engineering.

The limitations at the graduate level are even more noteworthy. At the masters level the regional institutions have great strength in teacher education and sufficient strength in business to serve the region adequately. The limitations basically mirror those at the baccalaureate level:

- health care, particularly masters in nursing
- social work
- engineering
- the sciences

At the doctoral and first-professional levels—except for education programs at ETSU and a small forestry program at SFASU—opportunities are lacking entirely. At this level, the availability of programs is as important as a device for strengthening institutions as for serving students. No one expects easy geographic access to a full array of doctoral programs; no state can afford such a luxury. Having said this, the most noteworthy program absence at the doctoral level is in the field of education at SFASU.

B. Adult Students

The adult population of the region—those individuals who have been out of school for a few years, have entered the work force in some capacity, and need additional education—represent a second clientele for the regional institutions of higher education. Experience indicates that the most effective way of assessing the adequacy of service to this clientele is to develop comparative statistics of enrollment levels of part-time students as a proportion of the underlying population having sufficient academic preparation to pursue course work at the collegiate level.
When these statistics were developed for Northeast Texas, comparing enrollments in this region with those in the rest of Texas, several interesting findings emerged. These findings were consistent for all races (Figure 20). The statistics reveal that:

- part-time enrollments in community colleges were lower in Northeast Texas than for the rest of Texas.

- part-time enrollments in undergraduate programs at four-year institutions were also lower.

- part-time enrollments in graduate programs relative to the eligible population was consistently higher in Northeast Texas.

These findings must be interpreted with considerable care, especially because they generally fly in the face of the prior set of findings about what is—and is not—readily available in the region. We believe that the interpretation that best explains the relatively low enrollments at the undergraduate level, whether in two- or four-year institutions, has to do with access that is based on considerations of time rather than either geography or program breadth. As noted earlier, the majority of two-year institutions in the region began as junior colleges serving full-time, traditional age students. They are still in the process of evolving to a position in which they are fully equipped, programmatically and psychologically, to meet the needs of a very different kind of student. Thus, service to the adult population tends to be through separate organizational units (continuing education divisions, etc.). These units offer a series of short courses and other services that provide real benefits to enrollees. These offerings, however, do not extend the programmatic offerings to this client group at times, and under conditions, that conform to the constraints created by the rest of their lives. If the colleges were to expand their offerings in vocationally specific fields, it would be particularly important to consider the possibility of offering such programs in ways and at times that would make them more accessible to part-time students.

The interpretation regarding part-time undergraduate enrollments at four-year institutions in the region is much the same. Both East Texas State and Stephen F. Austin, the institutions that represent the predominant undergraduate capacity in the region, are fundamentally residential institutions serving undergraduate students who are largely full-time and in the traditional age group. Using employers as the source of information, these institutions have not been aggressive in reaching out to serve the needs of employers and their employees. Again, the issue is primarily one of mindset about serving this quite different student body.
The findings regarding involvement in graduate programs is the most startling of all. They are best understood by focusing on the denominator of the ratio rather than the numerator—it is not that there are so many students enrolled in part-time graduate study, it is that the population base of adults having baccalaureate degrees and living in Northeast Texas is so small (recall Figure 8). Further, a significant proportion of such individuals are school teachers, a group of individuals with a high propensity to consume graduate education. As will be seen in the following section, employers definitely do not believe that there is a surplus (or even an adequacy) of graduate level course work available to part-time students.

It is our conclusion that it is only at the master's level that opportunities for part-time study are limited by program availability. At the other levels, the primary need is to configure course offerings in ways that make them conveniently accessible to part-time students.

C. Employers

It was in our interviews with employers that we gained perhaps the most definitive statements of educational need in Northeast Texas. The individuals whom we interviewed (see Appendix B) delivered a cogent and consistent set of messages about unmet educational needs in the region. These needs are summarized below by level of program.

Basic Skills. Many would argue that teaching basic literacy skills is not higher education at all. Employers indicate that this is their single largest need. Unskilled and semi-skilled workers represent the vast majority of their workforce, and much of this workforce has less than a high school education. As the employers embrace the concepts of Total Quality Management (TQM) or Continuous Quality Improvement (CQI), the demands placed on this workforce become heightened. In the absence of sufficient skills in reading, writing, computation, and group problem solving, these employees—and, therefore, their employers—are stymied in the adoption of organizational techniques that will keep the organizations competitive. Availability of a workforce with high levels of such skills may be the most important factor in maintaining (most importantly) and expanding the employment base in the region.

At the moment, these kinds of educational opportunities are provided through a variety of programs by Literacy Councils, Public Schools, and other groups. Community colleges are minimally active in the delivery of such programs, although there are exceptions. This splintering in the delivery of services, the difficulty of coordinating such services, and the disengagement of higher education institutions from the process, was stated as a concern by many employers.

Certificates. The only needs for individuals trained in specific programs were identified by employers in the health care field. They indicated significant needs for:

- nursing aides
- home health aides
• medication aides
• LPNs/LVNs

With regard to the latter, employers recognize the disincentive created by Texas licensure requirements for students to stop their training at this level. However, their needs are for an increasingly differentiated workforce of which LPNs are a critical component.

Associate Programs. At this level, there was one program that was overwhelmingly endorsed as being a critical need in the region—multi-craft maintenance mechanics. Graduates of such programs were identified as being needed by employers who run manufacturing firms, hospitals, public schools, and jails and other public facilities. They are seeking individuals who have a working knowledge of electricity, plumbing, hydraulics, and welding—enough knowledge to solve most problems and to know when to call in the experts.

To a lesser degree we found needs for programs that would prepare individuals to be:

• hospital clerks
• chemical plant operators
• plastics molding machine operators.

The employers with whom we talked had very high expectations that TSTC-Marshall would provide them with many of the maintenance mechanics and chemical plant operators they needed. Given the breadth of demand for maintenance mechanics, it is not clear that this single program will suffice.

Baccalaureate. At the baccalaureate level we found numerous "ideas" for areas in which either new programs would be required or existing programs would have to be expanded (or made more rigorous) to meet employer needs. Frankly, however, only one or two of these areas evoked the kinds of passionate statements of need found in other areas. A listing of the areas identified includes:

• Teacher Education
  • Foreign languages, particularly Spanish
  • Math
  • Sciences—chemistry and physics
  • Bilingual ESL
  A particular need is for teachers with multiple certifications.

• Engineering and Science
  • Chemistry
  • Engineering—process/manufacturing, chemical, electrical, mechanical
  • Environmental Science—with heavy emphasis on rigorous chemistry

• Production Management and Sales
  • Production logistics and planning
- Safety
- Wood products marketing

- Health care
  - Nursing
    - BSN at night
    - multi-skilled (e.g., nurses who can do X-rays, etc.)
    - ICU/CCU
  - Management
    - hospital/nursing home administration
    - management of physician group practice
  - Education
    - certified health educators
  - Allied health
    - physical therapists
    - occupational therapists

Of these, the only ones that attracted broad interest were those in the Allied Health fields.

Masters. While expressions of need at the baccalaureate level were lukewarm in the main, the requirements at the masters level were stated in the strongest of terms. The needs arise from conditions that vary considerably from industry to industry. In the health care field, the needs arise from a shortage of primary care physicians, the staffing requirements of rural health centers, the changing philosophies surrounding the delivery of community mental health and rehabilitation services, and the pressures of cost containment. In the technical fields, the demands arise out of the difficulties associated with recruiting baccalaureate-level engineers into a region where they can't be offered opportunities to pursue advanced degrees, from the needs to keep technical staffs current, and from the mandates of state and federal agencies in areas such as workplace safety and environmental protection. At the management level, the requirements are growing out of a recognition that the content of MBA programs is no longer adequate to the task.

The specific programs identified as being critical needs in the region were:

- Graduate Medical Education

  - Physician Extenders - Because of the rural nature of the region and the reliance on rural health centers as the mechanism for delivering health care to a substantial part of Northeast Texas, individuals who can provide primary health care services in such settings are a priority need. Nurse practitioners, nurse midwives, and physicians' assistants are the kinds of health care professionals most sought after.

  - Nurse Educators - By all accounts, the nursing programs in all institutions in the region have produced outstanding graduates that are the mainstay of the health care delivery system in the region. However, there are continuing needs for more nurses than the institutions can deliver. Further, there are long waiting lists of students wanting to enroll in nursing programs at almost all institutions. The constraint on expansion of nursing programs is faculty—the colleges do not have a source of masters degree level nurses sufficient to fill faculty positions. The few such nurses that exist in the region are quickly snapped up by health care providing
Social Work - The delivery of community mental health services is changing significantly and now requires large numbers of individuals who are trained in (and steeped in the philosophy of) social work as opposed to having psychology and counseling backgrounds. As a result, there are substantial needs for MSW graduates in the region.

Engineering - Masters level programs in all fields of engineering were cited as a need. Employers uniformly indicated that they had ready sources of baccalaureate-level engineers; this was not a significant issue. However, recruiting these engineers to Northeast Texas and keeping them current, once there, was a considerable problem. Thus, the consistent statement of need from the manufacturing employers who employ engineers.

Environmental Science and Occupational Health - The need for such programs arises from the presence in the region of numerous industries with the potential for environmental degradation and the priority placed by the residents on quality of life and protection of (particularly water) resources. The ability of the region to grow economically, within the value constraints imposed by its residents, may well depend on the ability of industry to assure environmental quality. As an additional consideration, the cost of doing business is such for most large organizations that they are extremely serious about occupational health programs—programs that provide preventive health care to their employees.

Leadership - Many employers recognized the need for masters level programs in organizational management. At the same time, they expressed dissatisfaction with traditional MBA programs. To them, a quality program would focus more on leadership than management.

Doctoral Programs. The only doctoral level program for which need was expressed was an Ed.D. program. Such programs typically serve students who are already well along in their careers—as principals, superintendents, or community college faculty or administrators—and, therefore, can enroll in such programs only if they are within a reasonable commuting distance. For much of the region, Commerce and Bryan/College Station are beyond the limits of a reasonable commute. Thus availability of such a program in a location(s) readily accessible to more of the geographic area of Northeast Texas is an understandable need.

First Professional. The only need mentioned in this area was for primary care physicians. No one suggested the creation of a full-blown training program for physicians in the region. But the importance of expanding the clinical portion of physician training and the availability of residency positions was recognized as being of central importance.

Continuing Education. A wide variety of needs for short courses and skill training was identified by the interviewees. Among the needs:

43
• Conversational Spanish - for supervisors, for health care providers, for social workers, and for teachers

• First-line supervision

• Ongoing training in the regulations emanating from OSHA/EPA and other government agencies

• Post-graduate clinical work in the various therapies (OT/PT, etc.)

• Statistical process control

• Uses of basic software packages

• Interpersonal skills.

This list is not meant to be exhaustive. Rather, it is illustrative of the variety of kinds of help employers would like to be able to obtain from colleges and universities in Northeast Texas.

Education of Minorities. Notwithstanding everything that has been reported about employer needs—or lack thereof—there are needs for minority graduates of all programs at any level. Uniformly, employers indicated that they were always in the market for qualified minorities, in spite of the fact that they might not be hiring other candidates. As one interviewee stated, "minority education at all levels is a must if the region is to take itself seriously."

Other Findings. In the course of our interviews with a wide variety of employers and community leaders throughout Northeast Texas, we heard a variety of important comments about their perceptions of the higher education institutions in the region, the roles they hope those institutions will play, and the capacities they hope to have developed in their midst.

Perhaps most important was the widespread feeling of disconnectedness between their organizations and the colleges and universities in their communities. One interviewee noted that "East Texas institutions have no culture of cooperation" and another stated that the colleges "need to get user friendly." When pressed, it became apparent that:

• they had been the recipients of numerous overtures soliciting involvement in activities designed by the colleges, but

• they were rarely approached by institutions that were 1) genuinely interested in understanding their specific needs and 2) willing (or able) to develop educational experiences that responded directly to those needs.
The bottom line is that they want the region's colleges and universities to take a much more active and assertive role in

- assessing educational needs
- being the neutral convener--many of the employers (e.g., in the health care field) are strong competitors, but they have common needs. They can work together if invited to do so by the local college, they can't if the initiative comes from a competitor.
- providing access to information—they are looking for ways to use college and university libraries, and, more importantly, to help them acquire information through Internet and other information-access tools.
- serving as broker—finding ways to bring educational programs to their communities even when the educational institution isn't the direct provider of the training. This extends to the creation of mechanisms through which employers can share the training expertise of their organizations' staffs with those of other companies (another reflection of the difficulties they face in trying to play the broker role themselves, especially when competitors are involved).
- providing access to training facilities—many firms (most of them in the region) are too small to maintain their own training facilities and rooms in local hotels, the typical solution to the problem, are minimally adequate at best. Many of these companies would be extraordinarily happy to rent a more appropriate facility from the local college, especially if it were well equipped with computers and other technology specifically designed to support the training function.

In return for the institutions' taking a more aggressive and helpful stance in such areas, the companies are more than willing to enter into mutually supportive relationships—through internships, co-op arrangements, faculty work experiences, equipment sharing, etc.

These employers are seeking much stronger ties with regional institutions than they have experienced in the past; the neighboring colleges and universities are increasingly important to them. Taking advantage of the opportunities presented, however, will require a considerably different mind-set than has been displayed consistently in the past.

D. The Communities

We did not make a systematic assessment of community needs. However, in the various interview processes, we heard a good deal about the issues facing the communities. First and foremost, they are seeking ways in which more high-paying jobs can be created for the residents of their communities. They are well aware that there are few opportunities for young people with college educations to be gainfully employed in their home towns. [This, by the way, is a potent argument for the development of additional health professions programs in local universities. These represent a major opportunity for individuals to obtain well-paying jobs in their local communities.] With the downturn in
so many of the industries on which these towns had become dependent (industries that provided high wages for semi-skilled work), this need represents a singular imperative in their minds.

In most cases, they are well aware of the major importance of the employers already in their midst. For this reason they are particularly anxious that the colleges and universities help them ensure that these employers become increasingly successful. A bird in the hand is worth considerably more than one (that might be) in the bush.

While these communities hold many of the same perspectives about the need to maintain and create jobs in the local areas, the differences in the subregions are reflected in some of the specific needs of the local areas. By virtue of their roles as regional health centers, Texarkana, Tyler, and Nacogdoches all have needs for a wider array of health professionals than is found in the region. In the Paris area the need for multi-craft maintenance mechanics surfaced along with other engineering technologies. The region also finds it difficult to recruit and retain engineers. The need for multi-craft maintenance mechanics is much smaller in the Nacogdoches/Lufkin area than elsewhere in the region; the union contracts in the major companies in this area continue to call for employment of single craft mechanics (electrician, millwrights, etc.). However, because of the changing demographics of the region it is more important to provide professionals in this part of the region of all kinds with Spanish language skills. The presence of Temple-Inland's corporate headquarters in Diboll create real possibilities (and needs) in the southern part of the region for specialists of all kinds in the wood products industry. The emerging plastics industries found in the Tyler/Athens/Jacksonville area create demands found nowhere else in the region.

Finally, as noted previously, they are not anxious for big change. They want their communities and their way of life to prosper and be enhanced but not at the price of seeing them radically changed.
V. Conclusions and Recommendations

A. Summary of Conclusions

From the results of the data analyses and interviews, it is clear that there are numerous and important unmet higher education needs in Northeast Texas; the region is fundamentally underserved in terms of the educational opportunities available at institutions within the region or made available by institutions outside the region. This lack of appropriate higher education services is felt by all of the various client groups identified earlier in this report—traditional students/recent high school graduates, adult (nontraditional) students, employers, and the communities in which these individual and corporate citizens reside. In this section we briefly summarize these unmet needs from the perspectives of each of these constituencies.

1. Traditional Students

Students who live in Northeast Texas and who elect (or, for some reason, are forced) to remain within the region to attend college have much less choice of educational programs than students who reside elsewhere in Texas. Limitations or choice abound at all levels:

- Certainly, the array of programs available at the associate level is better than at other levels, but even here there are shortcomings. For example, there are almost no associate degree programs in the skilled trades and few in engineering technologies. As a rule, offerings are limited in those fields that are likely to attract male students.

- The obvious limitation of choice at the baccalaureate level is the absence of any engineering programs within the region. In Northeast Texas, the concern with choice also extends to the subregion level. Since so much of the initial access is through community colleges, access to a reasonable array of baccalaureate programs in the local community is particularly important; students who do not leave home for their freshman and sophomore years of college are not likely to travel far for upper-division work. In this context, it is particularly important to have a broader array of upper-division program choices in both Tyler and Texarkana. Because of the relatively broad array of baccalaureate programs at both East Texas State and Stephen F. Austin, the needs in the subregions around these institutions are better served. It is noteworthy, however, that there are no baccalaureate level health care programs (especially nursing) at East Texas State University to serve the needs of the surrounding region.

- The limitations or choice at the masters level are generally the same as those at the baccalaureate level.

- There are no first-professional programs offered in the region.
• Doctoral programs are offered in only two fields, education and forestry.

Of these, the shortage of baccalaureate level opportunities (especially programs to satisfy the needs of students who begin their education at two-year institutions within commuting distance of UT-Tyler and ETSU-Texarkana) is particularly important to traditional students. As will be noted below, access to graduate programs is particularly an issue for place-bound, adult students.

2. Adult (Non-Traditional) Students

At the associate and baccalaureate levels, the needs of adult students are not significantly different from those of the traditional-age students, especially those who begin their college educations at junior colleges. They need access to a reasonable choice of programs within commuting distance of where they live and work.

At the graduate level, the needs change considerably. Individuals with baccalaureate level educations living in the region are very likely already employed in their professional field. Thus, their critical needs are for:

• continuing professional education

• educational courses/programs that are required for continued certification or licensure.

Because the array of professionals who work in the region have educational backgrounds far more varied than the educational program offerings of regional institutions—engineering, medicine, law, etc.—many of these individuals have no access at all to continuing education programs from institutions within the region. Because of the nature of the professional employment in the region, the needs are especially critical for:

• continuing medical/health care professions education

• continuing engineering education, particularly at the masters level

• access to doctoral programs in education in those parts of the region that are beyond reasonable commuting distance of either Texas A&M or East Texas State University.

• short courses required for continued licensure or certification in a wide variety of fields—e.g., drug and alcohol abuse counseling, social work, etc.

Since the needs for such educational opportunities are great, and since the clients for these programs are seldom in a position to leave the region to avail themselves of educational programs offered elsewhere, it is particularly important that ways be found to bring such programs to Northeast Texas.
3 Employers

The study reveals three distinct kinds of employer needs, two of which coincide directly with the needs of the student clientele. The first, and certainly the most widespread, need is for a workforce that is well versed in the basic skills. For many years employers in the region could afford to pay good wages to individuals who were not proficient in even the most basic of skills. Increasing competition, the need to contain costs, and other factors are now causing these employers to install increasingly sophisticated machinery, to adopt management practices such as TQM, and to rely increasingly on the workers themselves rather than their supervisors to ensure that work is performed both efficiently and effectively. These changing conditions have caused employers to place a premium on having a workforce with the skills necessary to adapt to new technology and participate fully in group decisionmaking. Since so many of their employees do not currently have these skills, employers place a high priority on ensuring that the basic skills of their current workforce are enhanced.

The second employer need is for individuals that fit emerging (or hard-to-fill) positions in their organizations. Among the greatest needs of this type are:

- nurses aides/home health aides
- multi-craft maintenance mechanics
- physical therapists
- production planners
- social workers
- physician extenders—nurse practitioners, physician assistants, etc.
- nurse educators

These are all the kinds of positions that cannot readily be filled by individuals brought in from outside the region. If such positions are to be filled, success will be much greater if there is a pool of individuals who grew up in the region and can be educated in the region.

Finally, employers have considerable concern that their professional workforce is current in their fields and have access to ideas that will help the employers stay competitive. Here, their needs and the needs of adult students for continuing education are found in almost complete congruence. Continuing education in engineering and other technical fields is particularly important since employers' abilities to hire individuals in these fields and move them into the region is so often affected by the prospective employees' having access to ongoing educational opportunities.

4. Communities

The communities that are located in Northeast Texas share a number of needs that largely will be addressed if the needs of the other constituents are met. First among
these is economic strength, a need that is closely tied to the need for high wage (and therefore, usually, high skill) jobs for the citizens of the community. In places such as Lufkin, this means ensuring the continued presence of such jobs already present in the community. In other communities this translates into replacing jobs (such as those in the defense industry) that are being lost and are unlikely to return. In still other communities, this means developing some high wage jobs to fuel an economy that has learned to survive without them.

These communities also need access to other kinds of services—health care primary among them—that are often found insufficient or lacking completely in areas that are not densely populated and, thus, don't attract specialists in the various types of services.

Finally, they need to ensure that their quality of life is not jeopardized. One of the comparative advantages of Northeast Texas is the quality of life of the area. This means protection of the natural resources and environment of the region as well as maintaining a society that is safer and more civil than the societies found in the large, metropolitan areas of the state.

B. Observations About the Policy Environment

While we were not asked to comment on the policy environment within which the higher education institutions of Northeast Texas must go about their business, several aspects of that environment became noticeable during the course of the study. In the main, they became noticeable because they serve as roadblocks to the institutions providing the kinds of services needed in the region. The following issues are particularly important:

- **Adult Literacy.** At the moment, basic skills education is delivered by numerous agencies through numerous programs. This array of programs creates the need for multiple bureaucracies and overlapping (and sometimes unattended) responses to the need. Further, because this particular need is outside the primary focal points of both K-12 and postsecondary education, it gets a low priority in the overall scheme of things. Yet it remains a very important problem to the corporate world and civic leaders. This area needs:
  - more attention
  - fewer "programs" with their associated overhead
  - more sources of service delivery (including employers, civic groups and others as well as the traditional purveyors of such education).

- **Funding for Vocational Education.** While perhaps unintentional, vocational education is underfinanced in Texas and several of the extant policies and practices conspire toward this end. Training in almost all the high-skill, technical areas is equipment intensive and requires significant start-up funding as well as mechanisms to replace equipment on a regular cycle. The approaches to funding both TSTC and the community colleges detract from these institutions' abilities to mount and sustain the
technical programs that Texas will need to be economically competitive in the 21st century. Among the problems:

- Absence of a mechanism to provide start-up funds. Institutions must basically fund the first two years' operations of a program out of their own funds and even then there is no allowance for the necessary equipment. This absence of an investment pool to support badly needed new programs (allocated competitively, on a regional basis or otherwise) slows down or precludes institutional responsiveness to local needs.

- The limited tax base for many community colleges. For most colleges, their service area is considerably larger than their taxing district. Financial arrangements cover many of the operating costs of supporting students, but the absence of a broader tax base gets in the way of developing the asset base required to develop and sustain equipment-intensive, high cost programs.

- The funding mechanism for TSTC is, in many ways, worse than that for the community colleges. All of their programs are high cost; they have few if any relatively low cost programs that help them balance the books. At the same time, they are funded on the basic community college formula without the benefit of the local tax component. To the extent that they receive special appropriations, they do so at the risk of congenial relationships with the community colleges.

In short, the mechanisms put in place to fund two-year institutions in Texas appear designed more to minimize costs than to maximize their service potential.

C. Recommendations

Given these findings, and being cognizant of the need to make prudent choices in the use of the public's resources, we offer the following recommendations to the presidents of the higher education institutions in Northeast Texas and to the higher education policymakers of the state.

1. That the institutions in the region continue to work as a consortium on behalf of the citizens of Northeast Texas.

The conduct of this needs assessment study represents the first cooperative endeavor of all the public higher education institutions of the region. This spirit of cooperation should carry over to delivery of services to the region. There are many parts of the region that are outside the service area of any one of the community colleges in the region. Similarly there are needs in the region that cannot be addressed adequately by any one of the institutions, but could be addressed by institutions working in concert. As a result, we suggest that the informal consortium that was formed to support and oversee the conduct of this study be given longer life and charged with providing guidance in the implementation of the recommendations that follow.
2. That the institutions undertake a much more active campaign to serve local communities from the already existing educational capacities of the campuses.

Some of the needs of local employers can be served readily by resources already available on the campuses (training in conversational Spanish, for example). What is needed is a commitment to understand these needs and to be responsive. This may mean more than anything else that the internal mechanism and reward structures of the institutions be reexamined to ensure that there are incentives rather than roadblocks to the provision of such services.

3. That the program offerings of the institutions of higher education be expanded to provide a greater range of choices to those individuals residing in the region. Further, that these program expansions be accomplished with particular attention to the following criteria:

a. Programs most likely to lead to high wage employment within the region. As noted earlier in this report, there are relatively few opportunities for college graduates to be employed in the region. Most baccalaureate degree winners (except for teachers) must leave Northeast Texas if they are to be gainfully employed in their chosen field. At the same time, there are real employment opportunities in the region for graduates of programs not available in regional colleges and universities. If broader programmatic choices are to be offered, priority should be given to those that hold a significant promise of employment for the programs' graduates.

The list of programs that fit this criterion best is:

- certificate programs in nursing aide/home health aide, etc.
- licensed vocational nursing
- associate programs in multi-craft maintenance mechanisms
- baccalaureate programs in physical therapy and production planning and management
- masters programs in social work
- masters programs for physician extenders (nurse practitioners, physical assistants, etc.) and for nurse educators

These programs are needed to provide health care to the relatively heavily populated, but rural, Northeast region of Texas and to maintain the physical plants and production facilities of the many and varied employers in the region.

b. Programs that will serve to provide community college graduates with a wider array of upper-division program choices. This means, most specifically, adding selected programs at UT-Tyler and ETSU-Texarkana, especially programs that might provide more employment opportunities for males (since these two institutions succeed in attracting a much smaller proportion of male community
college transfers than most other senior institutions in the state). Programs such as criminal justice, engineering and related technologies, and agriculture and natural resource management have traditionally been of particular interest to men. While engineering fits the criteria, it is probably not a wise investment at this time because of cost, limited employment opportunities for program graduates, and general absence of the strong math and physical science infrastructure necessary to support engineering programs. Consideration should also be given to baccalaureate level health related programs at ETSU.

4. That primary emphasis be given to providing educational opportunities to non-traditional students through use of non-traditional delivery mechanisms.

Many of the most important higher education needs in Northeast Texas cannot be addressed feasibly by simply adding new programs at one or more of the colleges and universities in the region. There are a variety of reasons for this conclusion, among them:

- The fact that demand would be episodic and relatively small. Many of the most important needs are at the graduate level in fields where the potential student base is not large. A program would have to be offered only once or twice to satisfy the pent-up demand.

- The potential student body is scattered. As noted, one of the primary difficulties of providing any kind of service to Northeast Texas is the fact that the region's population is not concentrated in a few easily served metropolitan areas. Because the region is large and many of the needs are for programs that would serve part-time (therefore, commuting) students, these needs can't be served by locating a program in a single place.

- The foundations upon which to build many of the required programs are not in place in the region's colleges and universities. The best example, perhaps, is engineering where the overwhelming need is at the masters level and where there are no undergraduate programs located in the region. There are other examples.

- The array of needs is so broad that the institutions and their funders cannot afford to respond to but a very few of them if they choose to do so by developing programmatic capacity at one or more of the regional campuses.

The result is that the colleges in the region can elect either to continue business basically as usual or to seek entirely new ways of serving the region. We believe that Northeast Texas and the region's colleges and universities will be better served if the latter strategy is followed. While there are alternative ways in which this delivery system could be structured and operated, the following "design parameters" should be seriously considered.
a. Each college in the region should become an "Educational Access Center" that delivers a wide variety of services, only some of which they originate. The colleges should become brokers as well as providers of, becoming wholesalers as well as retailers of educational services. This means that each institution (or cooperating set of local institutions) should create the capacity to:

- assess regional needs and work with the community to identify priorities
- identify the most appropriate providers of the required programming, whether within the region, elsewhere in Texas, or anywhere in the U.S. (or internationally)
- make the necessary financial arrangements
- do the scheduling
- build the local networks necessary to advertise the availability of programming
- help community users learn to access external data sources through such mechanisms as Internet
- register students and otherwise handle the paperwork.

It also means that someone in the institution(s) must be prepared to play a much more active role as "neutral convener," bringing together natural competitors to address their common needs.

b. That appropriate facilities be created at colleges throughout the region that will allow the institutions to fulfill their roles as educational service centers. Many technologies could be utilized, from simple distribution of videotape and electronic mail connections to much more elaborate arrangements. However, we urge that particular consideration be given to use of interactive video, a technology that allows students to see and be seen by, hear and be heard by, the faculty member, regardless of where that faculty member is physically located.

c. That these facilities be networked together.

- This would allow each of the sites to be an origination site capable of delivering instruction to all other sites in the region. More practically, it would allow the network, collectively, to acquire the very different types of "head end" technology required to link to the different providers of educational programming elsewhere in the state, nation, and world.
• That consideration be given to making these facilities the linking point for rural area networks in their regions, designed to allow their utilization by health care providers and other potential users in the community. Conceptually it would be appropriate to think of this capacity as a component of community infrastructure, much like other utilities, rather than as separate capacity devoted only to educational applications.

Through this particular strategy, the institutions in the region can provide superior services to their clientele in Northeast Texas and they can maximize the return on investment made on the educational delivery system in the region. They can also serve as a demonstration site and provide leadership in the development of mechanisms by which other rural areas of the state can gain the benefits of postsecondary education and gain access to other services that are now beyond their reach.

5. That cooperative endeavors extend to research activities as well as to the delivery of instruction.

The major research capacities that exist within the region are at the Health Sciences Center at Tyler and at Stephen F. Austin. While considerably different, they find common ground in the underpinnings of chemistry and biology. While small kernels, these programs represent the best bets for the region to develop a research base large enough and focused enough to spin off economic benefits.

While the Health Sciences Center will inevitably pursue its own agenda in areas related to antibodies, immunology and pharmaceuticals, there are also considerable opportunities for collaborative work in biotechnology, environmental sciences, and environmental health between the Health Sciences Center and SFASU. The basic science capacity at the HSC coupled with the forestry program at SFASU (with the ties through that program to Temple-Inland and others) provides a nascent base for meaningful immediate work in the biotechnology of forest products.

There are no reasons, however, to limit the focus only to application of biotechnology to trees and products made from them. The domain of cooperation between the institutions should be viewed as biotechnology more broadly conceived.

With these capacities in place and the region badly needing the kind of economic development that can arise as spin-offs from intentional, applied research, we urge that:

• the work of the Health Sciences Center, especially that having potential for commercialization, be further encouraged.

• that research activities at and between UT-HSC-Tyler and SFASU (primarily) be fostered in such areas as Environmental Science and Occupational Health
and Biotechnology

All parties are interested; they need continual prodding and sufficient marginal investment (particularly a few added research-oriented faculty at SFASU) to turn the potential into a budding reality.

6. That policies that detract from successful delivery of services in the region be revised.

As noted earlier, the incentives (and capacity) for institutions to behave in ways most responsive to the needs of students and employers in Northeast Texas are often removed by the policy environments in which these institutions must operate. While these policy issues are technically outside the scope of the study, we nevertheless suggest that serious consideration be given to:

- Refocusing attention on the critical problem of adult literacy and creating ways of involving community colleges in the delivery of such services (perhaps through incentive-based programs that reward institutions for helping students reach, and demonstrate, specified levels of learning).

- Providing funding for program initiation under a region-by-region competitive process. As a comparison step, procedures for program approval, especially at community colleges, should be relaxed to allow them to respond quickly to local needs. One approach would be to allow programs to be established and then reviewed at some point (4 or 5 years) with the understanding that the programs will be eliminated (at least for purposes of state subsidy) if they do not meet pre-established performance criteria.

- Expanding the taxing bases of community colleges to be more in line with their service areas to help ensure that the colleges can maintain the assets necessary to provision of programs.

- Developing a funding mechanism for TSTC that is different from that of the community colleges, especially recognizing the absence of local tax fund support for these institutions and the capital requirements necessary to mount technical programs.

We believe that implementing these recommendations will allow the colleges and universities in Northeast Texas to provide cost-effective responses to the substantial needs we have identified in the region. Indeed, failure to adopt some of the strategies presented for consideration—particularly the use of technology to bring a wide array of services to the region—may represent the only strategy that will prevent higher education in Northeast Texas from being sacrificed in the numbers game as population and student demands elsewhere in the state grow faster than those in the Northeast. Only by approaching the unique problems of the region in new ways can the necessary services be provided within the limits of the resources that are likely to be available.
APPENDIX A

INDIVIDUALS INTERVIEWED AT COLLEGES AND UNIVERSITIES IN NORTHEAST TEXAS
Angelina College

Larry Phillips
President

Glenn Harris
Director, Technical Procurement Assistance

Jill Hill
Enrollment/Registrar

Fred Kanke
Dean of Community Services and Development

Jim Lovelady
Division Director, Tech-Vocational Division

Patricia McKenzie
Dean of Instruction and Admissions

Jerry Whitaker
Director, Regional Quality Workforce Council
East Texas State University

Jerry D. Morris
President

Vicki Davis
Assistant Vice President for Academic Affairs

John Edwards
Dean of Enrollment Management

Robert Folden
Director of Continuing Education

Jerry G. Horn
Dean, College of Education

Robert Houston
Dean, College of Arts and Sciences

Ron Huffstutler
Dean, Institutional Effectiveness and Continuing Education

Edgar Manton
Director, Institutional Research

Keith D. McFarland
Dean, Graduate Studies and Research

Trezzie A. Pressley
Dean, College of Business and Technology

Steven Shwiff
Associate Professor of Economics
Kilgore College

Frank Thornton
President

Jim Campbell
Dean of Students

Elwin Bone
Interim Dean of Academic Instruction

Brad Bunt
Small Business Development Center, Longview Center

Peggy Coghlan
Vice President

Charles Florio
Administrative Dean and Director of Human Resources

Joe Hendrix
Dean of the Longview Center

William M. Holda
Dean of Admissions and Registrar

Merritt Johnson
Director of Continuing Education, Longview Center

Beryl McKinnerney
Dean of Occupational Education

Dana Ransom
Director of Admissions
Northeast Texas Community College

Michael C. Bruner
President

Toby Abney
Director, Industrial Foundation

Charlotte Biggerstaff
Dean of Continuing Education

Phil Ebensberger
Dean of Admissions and Registrar

Susan McBride
Vice President for Instructional Services

Judy Traylor
Dean of Adult and Developmental Education

Robert Wall
Small Business Development Center Director

Jerry Wesson
Executive Dean of Student Services

Walter York
Quality Workforce Project Director
Panola College

William F. Edmonson
President

Susan Bailey
Vocational Counselor

Joe Hough, Jr.
History

Charles Hughes
Academic Dean

Jim Martin
Vocational/Technical Dean

June Nutt
Vocational Counselor

Jackie Robinson
Dean of Fiscal Affairs

Twink Ross
Director of Recruitment & Relations

Barbara Simpson
Admissions/Records Office

T. C. Smith
Mathematics

Betsy Wheat
Dean of Admissions

Bob Wikins
Computer Information Systems
Paris Junior College

Bobby R. Walters
President

LuLane Caraway
Director of Library Services

Dwight Chaney
Dean of Arts and Sciences

Mary Griffith
Vice President

Jerry Hammack
Director of Institutional Research

Jimmye Hancock
Dean of Instructional Support Services & Continuing Education

Mary Catherine Kincaid
Director of Admissions

Beverly Matthews
Chairperson of Computer Resource Committee

Vicki Oglesby
Dean of Applied Technology

Rita Tapp
Coordinator of Student Records

Robbie White
Director of Community Services
Stephen F. Austin State University

Dan Angel
President

Janelle Ashley
Vice President for Academic Affairs

Tom Atchison
Dean, College of Sciences and Mathematics

Scott Beasley
Dean, College of Forestry

Tom Franks
Dean, College of Education

Leon Hallman
Director of Continuing Education

Jim Hardy
Institutional Research

Bill Jackson
Director of SFA Small Business Institute

Fred Kitterle
Dean, College of Liberal Arts

James Standley
Dean, College of Applied Arts & Sciences and
Acting Dean, College of Fine Arts

Judd Staples
Assistant to President for Recruiting and Retention

Marlin Young
Dean, College of Business
Texarkana College

Carl M. Nelson
President

Herman Barnett
Chair, Business Administration Division

Ronald Bright
Counselor

Shirley Finn
Chair, Health Occupation Division

Royce Granberry
Chair, Science and Technology Division

Scotty Hayes
Director of Community Services

Steve Middlebrooks
Director of Admissions

Van Miller
Director of Institutional Research

David Mueller
Dean of Instruction

James Powell
Associate Dean of Evening and Continuing Education
Texas State Technical College-East Texas Center

Jack Foreman
Dean, East Texas Center

Chris Adams
Placement Officer

John Carnes
Associate Dean of Instruction

Lucy Carroll
CPA, Accounting Supervisor

Gail Dobbs
Director, Job Training Partnership Program

Lee Harkins
Associate Dean of Student Services

Beverly Hughes
Director Defense Conversion Program

Alex Kajstura
Program Chair

Diane Nobles
Director, Tech Prep Educational Relations

Michael Phillips
Director, Tech Prep Industrial Relations

Randy Pringle
Coordinator of Student Activities

Julian Redfearn
Job Search Coordinator, Defense Conversion Program

Cecil Taliaferro
Assistant to the Dean

Denise Trent
Job Placement, On the Job Training Coordinator, JTPA
Trinity Valley Community College

Ronald Baugh
President

Collette Hilliard
Dean of Enrollment Management/Registrar

Jan Huffstutler
Vice President for Instruction

Jerry King
Dean of Occupational Education

Judy Loden
Director of SBDC

Helen Reid
Dean of Health Occupations
University of Texas Health Center at Tyler

Allen B. Cohen
Executive Associate Director

Mark A. L. Atkinson
Chairman, Department of Biochemistry

Ronald F. Dodson
Associate Director for Research
Chairman, Department of Cell Biology and Environmental Sciences

Jeffrey L. Levin
Director of Occupational Medicine

Jerry W. McLarty
Chairman, Department of Epidemiology and Biomathematics

Michael K. Pangburn
Professor of Biochemistry

Barry T. Peterson
Chairman, Department of Physiology

David R. Shafer
Chairman, Department of Internal Medicine

Richard M. Viken
Chairman, Department of Family Practice
Director, Family Practice Residency Program
University of Texas at Tyler

George F. Hamm
President

Clayton Allen
Chair, Department of Technology

Vincent Falzone
Interim Vice President for Academic Affairs

Mary Fischer
Coordinator of Institutional Research

Barbara Hart
Assistant Vice President for Academic Affairs

Mark Heckmann
Executive Assistant to the President for Public Affairs

Robert Jones
Vice President for Administration

James Koukl
Director, Clinical Laboratory Services

Mark Kroll
Interim Dean, School of Business Administration

Stephen Lefevre
Dean, School of Liberal Arts

Allen Martin
President-Elect, UT Tyler Faculty Senate

Donald McClaugherty
President, UT Tyler Faculty Senate

Mac Moseley
Dean, School of Education and Psychology

Peter Nelligan
Chair, Department of Social Sciences
Sandra Sayles-Cross
Director, Division of Nursing

Ross Sherman
Chair, Department of Special Services

Lynn Sherrod
Dean, School of Sciences and Mathematics

Joy TURNS
Director of Development

Zola Walker
Director of Continuing Education

Ron Wall
Chief Fiscal Officer

Martha Wheat
Director of Admissions and Student Records
APPENDIX B

EMPLOYERS INTERVIEWED
EMPLOYER INTERVIEW LIST
(NORTHEAST TEXAS)

Athens, Jacksonville, Tyler, Texas

Argon Medical

Rick Foster
Vice President of Operations

Baxter Health Care

Terry Gustafson
Engineering Manager

Rod Little
Human Resources

Bonar Packaging

Mac Elgin
General Manager

EasTex Materials

Paul Streck
Warehouse Manager

Kelly-Springfield Tire Co.

John Shreve
Plant Manager

Steve Day
Manager of Training

Southwestern Bell

Anita Meyer
Area Manager, External Affairs

Robert Yeager
Assistant Manager
Trane Company

Bill Heim
Marketing

Charles T. Lombardo
Manager, Information Systems

Mark Reis
Information Systems

Bruce Schiller
Senior V.P. and General Manager, Compressor Business Group

Mina Stagner
Manager, Professional Recruitment

Tyler Pipe

Sam Alford
Vice President of Systems

Western Lithotech

Tim Birmingham
Coordinator, Environmental and Safety Affairs

Health Care Providers

The Clairmont

Cheryl Eubank
Administrator

Inis Taylor
Director of Nursing

East Texas Medical Center

Phil Parrett
Human Resources Manager
Home Health Agency

Robbie Hayes
Regional Director

Mother Francis Hospital

Maureen Lake
Vice President, Patient Care

Laura Owen
Vice President, Human Resources

Nan Travis Hospital

Scott Lowe
Director of Personnel

The University of Texas Health Center

George Hurst
Director

Sharon Rinkle
Director, Human Resources

Public Sector

Chapel Hill Independent School District

Roy Sulser
Curriculum Director

City of Tyler

Ernest Clark
City Manager

East Texas Department of Human Services
Mike Folman  
Executive Assistant

Melba Harris  
Smith County

Jim McConnell  
Personnel Director

Texas Employment Commission

Johnny Johnson  
Assistant Office Manager

Tyler Independent School District

Melba Van Reener  
Career Technology

Paris, Texas

Campbell Soup (Texas, Inc.)

R. J. Jones  
Manager, Engineering and Maintenance

Eleanor V. Maddox  
Director, Human Resources

Kimberly-Clark Co.

Jim Shay  
Plant Manager

Nacogdoches/Lufkin, Texas

Champion International Paper

Don Muhlbach  
Director of Human Resources
J. M. Clipper

Ronny Burden
Vice President of Operations

Peggy Moss

Lufkin Industries

Doug Smith
President

John Havard

Paul Perez
Director of Human Resources

Sunbeam

Steve Lemons
Direct or of Human Resources

Temple-Inland

Wanda Weeks
Technical/Professional Recruiter

Health Care Providers

East Texas Community Center

Robin Moore
Plant Manager

Medical Center

Bryant Krenek
CEO/Plant Manager

Memorial Hospital

Bob Deen
Associate Administrator/COO
Memorial Hospital (Lufkin)

Doran Gipson
Director for Professional Recruitment

Mike Taylor
Director of Human Resources

Woodland Heights Medical Center

Dan McBride
Plant Manager

Sally McKinney
Director of Human Resources

Texarkana, Texas

Alumax

Bill Caddenhed
Human Resources Manager

Robert McDole
Plant Manager

Colgate-Palmolive

Larry Hendron

Deborah Johnson
Director of Human Resources

David Shelton
Director of Management

Cooper Tire

Monty Degynansky
Engineer

Jean Huffman
Plant Chemist
Dan Lester
Plant Engineer

Bob Nelson
Plant Manager

Gary Roberts
Director of Human Resources

Health Care Providers

Area Health Education Center-Southwest
Herbert Wren
Director

Bowie County Health
Kathy Moore

Miller County Health
Marlene McLeod

Saint Michael Hospital
Julie Ray
Director of Human Resources

John Stanley
Director of Nursing

Texarkana College
Shirley Finn
Division Chair, Health Occupations

U.S. Army Health Clinic
Beverly King
Administrative Officer
Visiting Nurses Association

Pam Dickerson
Director of Nursing

Wadley Regional Medical Center

Debra McDaniel
Vice President of Nursing Services

Public Sector

Arkansas

Olin Crowell
City Manager

Bowie County

James Carlow
Judge

Mary Choate
Sheriff

Texarkana

Jim Hargrove
Executive Director, Housing Authority

George Shackelford
City Manager

Texas Dept. of Transportation

Al Gomey
District Engineer
Kilgore, Lone Star, Longview, Marshall, Scottsville, Tatum, Texas

CABLEC
William Bifinger
Human Resources Manager

Robert Fairchild
Plant Manager

Lone Star Steel
Claudie Henderson

John Irwin
Vice President Human Resources

Norit Americas
Marlin Fisher
Human Resources Manager

Petrolite Corporation
Mike McCrary
Technical Manager

Public Schools
Charles Newton - Carthage

Brian Nichols - Marshall

Jay Orr - Pine Tree (Longview)

Barry Rivers - Tatum

Stemco, Inc.

Doug Buck
Vice President, Human Resources
Brenda Sitton
Texas Eastman
Bob Grace
Personnel Manager

Bill Hanser
Supervising Training Representative

Nick Nabours
Professional Recruiting

Joe Randolph
Training Director

Texas Utilities

Richard Lynch

Trinity Industries

Perry Maxwell

George Staw
QUEST Coordinator
INTERVIEW TOPICS

The following topics will serve as the basis for an hour-long interview that is part of a higher education needs assessment study being conducted for the colleges and universities in Northeast Texas:

- Educational backgrounds of current employees
- Educational institutions that are the primary sources of new employees for your organization
- Availability of college graduates to meet your organization's current needs
- The kinds of college graduates you anticipate needing in the future
- Assessment of the quality of newly hired graduates, both in their field of specialization and in their broader general education
- Continuing education needs and opportunities for your employees
- Nature of your organization's relationships with colleges and universities in such areas as cooperative education, research, consulting, etc.
- Changes you would like to see in college curricula and/or degree programs to make the graduates more useful in your organization
- Ways regional colleges might enhance their services to more effectively serve your organization (new academic programs, better access to current programs, etc.)
- Willingness of your organization to engage in various kinds of partnerships with regional colleges (internship/cooperative education possibilities, sharing specialized equipment, faculty internships, etc.)
- Other critical issues concerning education that you may want to discuss.
APPENDIX D

CHAMBER OF COMMERCE/COMMUNITY LEADERS INTERVIEWED
Chambers of Commerce/Community Leaders
List of Interviewees

Athens, Texas

Ron Baugh
Immediate Past President
Athens Chamber of Commerce
Member of Athens Industrial Foundation

Kilgore, Texas

Bob Barbee
Mayor

Paul Bendel
Executive Director, Kilgore Chamber of Commerce

Amanda Pratt Nobles
Director of Kilgore Economic Development Corporation

Lufkin, Texas

Jerry Huffman
President, Angelina County Chamber of Commerce

Marshall, Texas

Jim Dane
Executive Director, Marshall/Harrison County Industries

Bob Fairchild
Cablec Corp.

George Grobowski
First National Bank

Bill Hansen
Eastman Chemical Co.

Rusty Howell
Howell and Sandlin
Pat Smith
Superintendent of Schools

Jerry Stallworth
President, Chamber of Commerce

Connie Ware
Ware Machine

Tommy Whaley
Logan and Whaley

Tony Williams
Marshall City Manager

Mt. Pleasant-Titus County

Marie Muse
Executive Director, Chamber of Commerce

Nacogdoches County, Texas

Bill Warner
Executive Vice President, Chamber of Commerce

Panola County, Texas

Robbie Smith
Industrial Development Foundation

Tommie Smith
Director, Chamber of Commerce

Richard Thomas
Panola College Board Member

Paris, Texas

Richard Chamberlain
Executive Vice President/CEO, Chamber of Commerce

JoAnn Parkman
Chamber of Commerce President
Bill Vaughan
1995 Chamber President

Texarkana, Texas

Jolane Cook
Economic Development Director

Tyler, Texas

Harold Beaird
Board of Trustees, TJC

Tom Mullins
President and CEO of Tyler Economic Development Council

A. W. Riter, Jr.
President, Development Board and Texas Chest Foundation
APPENDIX E

INTRA-REGIONAL PARTICIPATION RATE DATA
PARTICIPATION RATES OF NORTHEAST TEXAS HIGH SCHOOL GRADUATES IN TEXAS 2-YEAR COLLEGES

Source: Texas Education Agency
Texas Higher Education Coordinating Board

2-YEAR COLLEGES
PARTICIPATION RATES OF BLACK NORTHEAST TEXAS HIGH SCHOOL GRADUATES IN TEXAS 2-YEAR COLLEGES

Source: Texas Education Agency
Texas Higher Education Coordinating Board
PARTICIPATION RATES OF BLACK NORTHEAST TEXAS HIGH SCHOOL GRADUATES IN TEXAS 4-YEAR COLLEGES

Source: Texas Education Agency
Texas Higher Education Coordinating Board
PARTICIPATION RATES OF BLACK NORTHEAST TEXAS HIGH SCHOOL GRADUATES IN TEXAS 2 & 4-YEAR COLLEGES

Source: Texas Education Agency
Texas Higher Education Coordinating Board
BASE DATA FROM WHICH SOME OF THE CRITICAL RATIOS IN THE REPORT WERE DEVELOPED

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APPENDIX G

COST CONSIDERATIONS
Cost Considerations

One of the requirements of the study was to:

- estimate the costs of expanding the higher education system in the region to meet these (regional) needs.

Because of the nature of the findings and resulting recommendations, it is extremely difficult to develop cost estimates. Nevertheless, we recognize the importance of putting some ball-park parameters around the cost implications of our recommendations. To that end we have made a series of assumptions and proceeded to develop a rough set of cost estimates.

a. Program expansion
   - Start-up capital costs
   - Staff and annual operations

   3-5,000,000
   3-4,000,000

b. Research enhancement
   - Start-up costs
   - Annual operations

   2,000,000
   1,500,000

c. Education access centers
   - Capital costs*
   - Annual operations**

   25-30,000,000
   7-10,000,000

* Excludes cost of transmission capacity (microwave/fiber)
** Excludes line charges