DOCUMENT RESUME

ED 359 869 HE 026 565

TITLE	A Study of Faculty Needs in Texas, 1991-2008. A Report to the Texas Higher Education Coordinating Board by the Faculty Shortages Advisory Committee.
INSTITUTION	Texas Higher Education Coordinating Board, Austin.
PUB DATE	Jan 92
NOTE	110p.
AVAILABLE FROM	Texas Higher Education Coordinating Board, P.O. Box 13780, Austin, TX 78711.
PUB TYPE	Reports - General (140) -- Statistical Data (110)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*College Faculty; Community Colleges; Comparative Analysis; Departments; Enrollment Trends; Higher Education; Long Range Planning; *Minority Group Teachers; Postsecondary Education; Public Colleges; Statistical Data; *Teacher Recruitment; *Teacher Shortage; *Teacher Supply and Demand; *Trend Analysis
IDENTIFIERS	*Texas

ABSTRACT

This report predicts that, during the next two decades, Texas colleges and universities will have increasing enrollments with larger increases in minority students. Quantitative and anecdotal evidence indicates faculty hiring will become more difficult in this and the next decade if current trends continue, particularly in minority faculty where there already exists a shortage of African American and Hispanic college faculty. This report examines the faculty shortage needs of Texas in the public senior universities and junior colleges and makes a determination of how the state will be affected by the projected nationwide shortages. The report provides recommended approaches to alleviating the expected problems which focus on: (1) increased efficiency in use of faculty resources; (2) increased production of doctoral degree holders; and (3) efforts to increase the number of minority graduate students. Appendices, comprising over 50 percent of the report, contain data tables detailing anticipated staffing and hiring requirements for Texas colleges and universities for all faculty and for each academic discipline. Also, the appendix provides survey results from Texas public senior and community colleges concerning faculty hiring difficulties. (GLR)

A Study of Faculty Needs in Texas

1991-2008

A Report to
Texas Higher Education Coordinating Board
January 1992

Texas Higher Education Coordinating Board
Faculty Shortages Advisory Committee

Dr. Willie A. Baker, Chairman
Vice President for Academic Affairs
The University of Texas at Arlington

Dr. Grace L. Butler
Associate Vice President for Faculty Affairs
University of Houston

Dr. Jaime Chahin
Associate Vice President for Human Resources
Southwest Texas State University

Dr. Mary Elliott
Dean of Instruction
Vernon Regional Junior College

Dr. Charles S. Hardwick
Business & Public Administration
University of Houston-Clear Lake

Mr. Mike Roark
Director of ATC
El Paso Community College District

Mr. Larry Shirts
Instructor of Political Science
North Harris College

Mr. Larry Stanley
President
College of the Mainland

A STUDY OF
FACULTY NEEDS IN TEXAS
1991–2008

January, 1992

A REPORT TO THE
TEXAS HIGHER EDUCATION COORDINATING BOARD
P.O. BOX 13780
AUSTIN, TEXAS 78711

I. INTRODUCTION

Over the past several years there has been a number of studies that have analyzed the supply of, and demand for, new faculty in this decade and beyond. These studies varies in nature and scope, but almost all reach the same general conclusion -- that in the latter half of the 1990s and the first decade of the next century there will be a greatly increased demand for new faculty. In a number of areas the increased demand will create moderate to severe shortages.

There will be no attempt here to chronicle all of these efforts, but a number are worth mentioning to indicate the diversity of the studies. Using a highly detailed model, Bowen and Sosa (1) studied national supply and demand for faculty in the arts and sciences. Lozier and Dooris (2) studied retirement trends at 24 universities. McGuire and Price (3) reported on results from a study of 46 private colleges and universities. Daigle and Rutemiller (4) looked at data for a large state university system. All were quantitative studies attempting to project future trends in supply and/or demand. More anecdotal in nature in the report by El-Khawas (5), which gave summary data of the perceptions of academic officers about faculty hiring. She reports an increase in difficulty in hiring, particularly in some disciplines. She also found concern about the quality of job applicants and near unanimous belief that there will be faculty shortages in the future.

In summary, there appear to be both quantitative and anecdotal evidence predicting that faculty hiring will become more difficult in this and the next decade if current trends continue. A shortage of faculty will have serious financial implications for higher education and will adversely affect the quality of institutional faculties.

In addition to the general problem of expected supply and demand, there exist now other problems of underrepresentation of African-Americans and Hispanics on college and university faculties. Brown (6) has documented this underrepresentation and indicates that it results from low -- and declining -- doctoral production and low retention in faculty positions. Uribe and Verdugo (7) specifically surveyed Hispanic faculty and verified their national underrepresentation. They also determined that Hispanic faculty tend to be concentrated in smaller institutions.

With the growth in overall enrollments that is predicted for Texas (8) and the expectation of proportionately larger increases in minority students, Texas will face serious problems in obtaining quality faculty that also represent the demographic make-up of student populations.

II. CHARGE TO THE COMMITTEE

The Committee, appointed by the staff of the Coordinating Board, was charged with examining faculty supply needs in the public senior universities and community and junior colleges to determine how Texas institutions will be affected by the projected nationwide shortages. If shortages affecting Texas were anticipated, the committee was to recommend approaches to alleviate the problem. Finally, the committee was asked to address the specific issue of minority faculty in Texas.

III. PUBLIC SENIOR INSTITUTIONS

A. Projection of Needs for Texas

The database used to make projections of future faculty needs was developed from reports (CBM-008) for fall, 1988. Those reports, submitted by the institutions to the Coordinating Board, among other things, detail the percent of time and tenure status of all teaching faculty. According to the data, there were 10,273 tenured and tenure-track faculty employed that semester in the public senior institutions. These data were then disaggregated according to the disciplinary area (English, Business, Engineering, etc.) of primary teaching responsibility. The age distribution of each discipline group was then obtained. Using these data and making certain assumptions that will be discussed below, the tables in Appendix A, which project the numbers of faculty that must be hired, were generated.

To get an estimate of the numbers of new faculty that will be needed it was first necessary to determine the total faculty required to maintain the student/tenure-track faculty ratio that existed in fall 1988. Using the enrollment forecast published by the Coordinating Board in January 1990, the total faculty needed can be projected. Assuming further that proportional student enrollment among fields of study will remain essentially constant, it is also possible to project faculty needs by area. These results are in Appendix A, where faculty needs in three-year segments are projected to the year 2008.[1]

Retirements -- Having obtained the total number of faculty needed, the number of new hires was estimated. This starts with a projection of retirements. To make this projection, an average

---

[1]There is an important point that needs to be made about these projections, namely that they underestimate the real need for faculty. Table I shows a 10 year history of headcount enrollment and full-time-equivalent faculty in the ranks of professor, associate professor and assistant professor. While enrollments have increased approximately 20 percent over that period, the number of faculty has remained essentially constant. Thus the student/faculty ratio has been steadily increasing since 1981, and the use of 1988 as a base for projection automatically underestimates the true need for new faculty as it compares to the more desirable ratios of the early 1980s. Nevertheless, in an effort to remain conservative about projected needs, 1988 is the base used for this study.

TABLE I

FALL SEMESTER ENROLLMENTS AND FACULTY[a]
TEXAS PUBLIC SENIOR INSTITUTIONS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Headcount Enrollment	341,556	355,119	369,247	371,740	361,052	359,343	368,344	388,237	403,098	407,809
FTE	11,170	11,278	11,523	11,612	11,287	10,983	11,002	11,247	11,352	11,503
P, AP, aP[b]										

[a]The faculty data presented here are not directly comparable to those in Appendix A. The data here are taken from the average salary reports and are FTE data for all faculty while those in Appendix A are headcount data for tenured and tenure-track faculty only. The data used in Appendix A have been collected in a consistent manner only since 1987 and could not be used to show a long term retrospective trend.

[b]P=Professor, AP=Associate Professor, aP=Assistant Professor

retirement age of 68 is assumed.[2] Using the age distribution data from 1988, the number of retirements in three year increments is projected. These data are given in Appendix A for all faculty and for selected disciplines. The approach implicitly assumes that none of the persons hired after 1988 will retire before 2009, an assumption that is generally but not strictly valid. Thus the projected retirement figures are to some extent conservative. Although there are some differences among fields, the period 1995-2000 should see a distinct increase in the number of retirements. Further, as can be seen in Table II, over 50 percent of the faculty in the 1988 data base are projected to retire before 2009, with this figure being much higher in certain fields such as education and foreign languages. This agrees with conclusions reached by Bowen and Sosa (1) in their national study. It is possible, of course, that removal of mandatory retirement will affect the projection, but at least one study has shown that eliminating mandatory retirement should have little impact on average retirement age (2 and reference therein).

"Quits" -- Having determined projected retirements it then becomes necessary, in order to get total replacement needs, to estimate the number of persons leaving teaching for reasons other than retirement -- such as death and pursuing careers outside academia. The basic approach taken was that used by Bowen and Sosa (1), although they separated projections of deaths from those leaving the profession while in this study the term includes both. The "Quit" figures were obtained by assuming that annually 5 percent of the non-tenured faculty and 1 percent of the tenured faculty leave for reasons other than retirement. These percentages are those used by Bowen and Sosa in the more conservative of their two models to predict only numbers leaving the profession. Our estimates may thus be low because they include deaths. "Quit" projections are given in Appendix A.

"Total Hires" -- Having obtained projected retirement, "Quits" and total faculty needs it is possible to project total new hires. Appendix A gives total replacements, which is the sum of retirements and "Quits" and total new hires. New hires is the sum of total replacements and additions for growth in enrollments. Again, it needs to be emphasized that the additions for growth are those needed to maintain the 1988 student/teacher ratios.

---

[2]The average retirement age for faculty appears to be 65-66 (1). An average retirement age of 68 was used so that predictions of faculty needs would be conservative and the use of 68 allows for an increase that may result from the removal of mandatory retirement.

TABLE II

PERCENTAGE OF FACULTY REACHING THE AGE OF 68 BEFORE 2009
TEXAS PUBLIC SENIOR INSTITUTIONS

Agriculture	47%	Foreign Language	66%
Architecture	49	Health Service	49
Biology	51	Home Economics	48
Business	43	Law	52
Communication	49	Library Science	56
Computer Science	37	Mathematics	51
Education	65	Physical Sciences	57
Engineering	50	Psychology	42
English	56	Public Affairs	52
Fine Arts	54	Social Science	52

All Faculty 52%

The trends for individual teaching fields, as well as that for all faculty cumulatively, follow the same pattern. There is a rather large projected need for the 1991-93 period as a result of expected increases in enrollments. Demand then drops for 1994-96 and begins to rise around 2000 as a result both of enrollment increases and accelerated numbers of retirements.

A comment needs to be made about the very large figures for additions for growth in the 1991-93 period. As a result of the way the data were obtained, that figure is in effect additions for growth over five years, not three. Recall that the base year for number of faculty was 1988. In reality, as Table II shows, there was essentially no growth in numbers of faculty in 1989 and 1990. Thus in order to achieve in 1993 the student/faculty ratio that existed in 1988, it will be necessary in the 1991-93 period to hire new faculty not only to compensate for growth in enrollment in that period but also to compensate for growth that occurred in 1989 and 1990. Thus the number is somewhat larger than in other three-year periods.

It would have been desirable to compare the number of new hires with historical numbers of hires. Unfortunately, good data on a statewide basis are not available. However, six institutions (UT Arlington, Texas Tech, SWTSU, NTSU, SFASU and ETSU) kindly provided hiring data for the past three to five years. Using the same methodology described above to project new hires for each of those six institutions, all would expect to hire significantly more annually than they have averaged over the past few years. We conclude that the projections represent significantly increased hiring rates for the state as a whole. Whether the state is able to hire at the projected rates is at this point determined more by the availability of funds than by the availability of persons seeking employment.

B. Comparison of Needs with Availability

To put the numbers into a context to assess the impact of possible shortages in Texas, the availability of new faculty must be projected. Because data on doctoral degree production are readily available, the committee has chosen to examine those disciplines which typically hire at the doctoral level and which are represented in a large number of Texas institutions. Even with good retrospective data on doctoral degree production, it is very difficult to predict future numbers, and a thorough examination of that question is beyond the scope of the committee. However, Bowen and Sosa (1) give availability[3] data

[3]Availability, as distinct from degree production, is essentially those degree recipients who seek academic employment as contrasted, for example, to seeking employment in the private sector or returning to their native countries.

for a number of fields and those were used where given. Specifically, their projection, assuming that the fraction of new doctorates seeking academic employment will remain constant, was used. While the committee used that assumption, it is worth noting that the actual trend in essentially all fields is for a larger portion of new doctorates to be employed outside academia. To the extent that the trend continues our estimates of availability are high.

In those cases where availability estimates were not given by Bowen and Sosa (1), data taken from the 1988 Summary Report of Doctoral Recipients from U.S. universities (9), which gives extensive information on doctoral degree production, were converted to availabilities. This was done by taking the number of degrees produced in 1988, subtracting the number historically accepting employment outside academia and allowing for the differences between U.S. citizens and non-citizens. It is important to emphasize that it is assumed that annual availabilities will not change over 1991-2008. That may be an invalid assumption, but it would be fruitless to take into account unpredictable factors which affect availability.

The data in Tables III-V attempt to present information allowing a better understanding of the meaning of the data on new hires. Table III gives data on 1988 degree production and the trends over the previous five years. The trends range from large increases to decreases. To be useful, however, the data on degree production must be converted to availabilities, and this was done as described above. Table IV shows the availabilities that were used in this study.

The final step, then, is to compare the projections of need with those of availability. These results are presented in Table V, where the percentages of nationally available doctorates that will be needed by Texas senior public institutions are provided. Under the assumption of constant availability, in all fields studied the "Texas share" increases with time, suggesting increasing difficulty in hiring. A logical question to ask, however, is what does it mean in terms of competition with other states to conclude that Texas needs to employ a certain percentage of the available doctorates in a given year? At the present time, public senior institutions in Texas enroll just under 5 percent of all students attending senior institutions nationwide. Ignoring any competition from junior and community colleges, Texas' pro rata share would be 5 percent. Thus a demand near or above 5 percent of projected availability would suggest a highly competitive market for new faculty. Table V indicates clearly that Texas can expect a difficult faculty recruitment market in most fields, including many in which the market has not been tight in the past. Those include English, foreign languages, history and political science.

TABLE III

DOCTORAL PRODUCTION IN THE UNITED STATES[1]

FIELD	DEGREES GRANTED 1988	FIVE YEAR TREND IN PRODUCTION 1983-1988
ALL FIELDS	33,456	Slight Increase
BIOLOGY	3,396	Slight Increase
BUSINESS	1,039	Increase
CHEMISTRY	2,018	Increase
COMMUNICATIONS	247	Constant
COMPUTER SCIENCES	514	Large Increase
ECONOMICS	825	Constant
EDUCA ⁻N	6,349	Decrease
ENGINEERING	4,190	Large Increase
ENGLISH	914	Constant
FOREIGN LANGUAGES--ALL	430	Decrease
GERMANIC LANGUAGES	76	Constant
ITALIC LANGUAGES[2]	114	Decrease
SPANISH	137	Constant
GEOLOGY	456	Increase
HISTORY	603	Decrease
MATHEMATICS	749	Constant
PHYSICS	1,302	Increase
POLITICAL SCIENCE	391	Constant
PSYCHOLOGY	3,058	Decrease
SOCIOLOGY	449	Decrease

[1]Data taken from the 1988 Summary Report of Doctoral Recipients, National Academy Press.

[2]Excluding Spanish

TABLE IV

PROJECTED AVAILABILITY OF DOCTORATES IN THE UNITED STATES

FIELD	AVAILABILITY
BIOLOGY	1,514
BUSINESS	785
CHEMISTRY*	577
COMMUNICATIONS	189
COMPUTER SCIENCE	307
ECONOMICS	388
EDUCATION	2,597
ENGINEERING	1,048
ENGLISH	686
FOREIGN LANGUAGES -- ALL	324
GERMANIC LANGUAGES	57
ITALIC LANGUAGES	86
SPANISH	103
GEOLOGY	314
HISTORY	380
MATHEMATICS	375
PHYSICS	492
POLITICAL SCIENCE	184
PSYCHOLOGY	1,012
SOCIOLOGY	211

*Taken from Bowen and Sosa. All others were calculated as described from data in Ref. 9.

TABLE V

PERCENT OF AVAILABLE DOCTORATES NEEDED BY TEXAS PUBLIC SENIOR INSTITUTIONS*

	1991-93	1994-96	1997-99	2000-02	2003-05	2006-08
BIOLOGY	2.0%	1.8%	1.7%	1.9%	2.2%	2.7%
BUSINESS	7.1	5.8	6.2	6.6	8.7	10.4
CHEMISTRY	3.0	2.3	3.2	3.2	3.6	4.7
COMMUNICATIONS	5.7	4.8	5.3	5.7	5.8	6.0
COMPUTER SCIENCE	12.7	8.9	11.8	11.8	15.0	19.5
ECONOMICS	2.1	1.8	2.4	2.4	2.9	2.9
EDUCATION	2.3	2.2	2.7	2.9	2.9	3.1
ENGINEERING	5.8	4.3	5.2	5.9	7.4	7.7
ENGLISH	7.3	5.7	6.5	7.3	8.7	9.4
FOREIGN LANGUAGES	20.0	14.2	17.0	17.9	23.2	24.4
GERMANIC LANGUAGES	4.6	4.6	5.7	5.7	6.8	7.3
ITALIC LANGUAGES	7.9	6.5	7.9	6.9	11.5	11.5
SPANISH	11.5	6.2	8.5	8.9	10.8	12.0
GEOLOGY	10.5	6.0	10.5	12.4	11.8	12.4
HISTORY	5.8	4.7	4.1	6.2	7.5	7.2
MATHEMATICS	8.2	5.8	6.0	8.1	10.5	11.6
PHYSICS	2.9	2.0	2.2	3.0	3.7	4.4
POLITICAL SCIENCE	7.3	5.8	6.0	6.9	10.0	12.0
PSYCHOLOGY	2.0	1.6	1.8	1.7	2.4	2.5
SOCIOLOGY	4.3	3.9	3.5	4.1	5.5	4.7

*Obtained by taking the total new hire projected for Texas in each three year segment, dividing by the total availability for that segment and converting to percent.

There are many caveats that should be considered with interpretation of the data in Table V. There are arguments for and against the assumption of constant availability. Whatever the exact number, the committee does not see convincing evidence that a large increase in availability is likely, even over a 10- to 15-year period. Also, significant differences in the supply-demand relationship within broad fields exist and will likely continue. For example, our projections suggest relatively larger availabilities compared to needs in biology, psychology and education. These are diverse fields, however, and there exist significant shortages now in specialties within the areas such as cognitive psychology and bilingual education. One can only hope that in time students in the general field will choose to move into specialties where shortages exist.

IV. JUNIOR AND COMMUNITY COLLEGES

The assessment of supply and demand for community college faculty is much more difficult than for senior institutions. There are essentially no national studies which are of assistance in projecting the specific situation for Texas. Further, one-half of the faculty in community colleges teach in technical-vocational programs, where experience is often a more important criterion than academic training. This smaller dependence on doctoral faculty makes normal approaches to supply/demand studies less useful.

Nevertheless, the committee has analyzed the expected need for community college faculty, both academic and technical-vocational, using the same methodology as was used for senior institutions. These results are presented in Appendix B. It is clear from these data that the community colleges, in common with the senior institutions, can expect increasing needs for new faculty, both academic and technical-vocational, over the next 15 years. This need arises from an increase in rate of retirement as well as growth in enrollment.[4]

Although it is difficult quantitatively to predict the supply of potential community college faculty, it is reasonable to conclude that the shortages which are expected at senior institutions will have an impact on community colleges as they attempt to hire, to some extent, from the same pool of applicants. Institutions in rural areas will probably be affected more than those in urban areas if true shortages develop.

Lacking a sound methodology for projecting supply/demand relationships for community colleges, particularly for technical-vocational faculty, the committee decided to assess the current situation and opinions about future prospects from community college personnel. In October 1990, questionnaires were sent to the presidents or chancellors of the 49 Texas community, junior, and technical colleges requesting their responses to current and projected faculty shortages. There were 42 (89.4 percent) questionnaires returned for analysis. The results of the survey are presented below and in Appendix C.

A. Survey Results

When asked whether their institution had difficulty in hiring qualified faculty, more than 2/3's answered "yes." Over 60 percent of the responses came from small rural colleges.

---

[4]The "Quit" rates used were the same as for the senior institutions, although there is less evidence to support the use of those rates.

Of those who indicated difficulty in hiring qualified faculty, certain disciplines were identified as particular problem areas. Health-related fields were singled out by almost 2/3's of the institutions reporting hiring difficulties in vocational credit disciplines. Among academic disciplines, math/science were named by almost 2/3's of the institutions reporting difficulties.

When asked to speculate regarding possible problems over the next five to ten years, more than 80 percent indicated they anticipated a shortage of full-time faculty. The negative responses were evenly split between colleges in rural and urban areas. Once again, health-related fields (in the vocational credit disciplines) and math/science (among the academic disciplines) were mentioned most often as the areas where shortages were most likely to occur.

When asked what factors appeared to be contributing to the shortage, certain trends emerged (see Table VI).

TABLE VI

TEXAS PUBLIC JUNIOR/COMMUNITY COLLEGE SURVEY
FACTORS AFFECTING SHORTAGES OF FULL-TIME FACULTY

Factors	Number Selecting Each Factor	Percentage Selecting Each Factor*
Salaries too low	27	55%
School location	14	29%
Educational qualifications	23	47%
Work experience	7	14%
Other	8	16%

Additionally, more than 95 percent of the institutions reporting hiring difficulties expressed particular problems in attracting sufficient numbers of qualified minority faculty in both vocational and academic disciplines.

Finally, respondents were asked to describe the educational qualifications of their current faculty (see Table VII).

*Percentages won't total 100 percent due to multiple mentions.

TABLE VII

TEXAS PUBLIC JUNIOR/COMMUNITY COLLEGE SURVEY

FACULTY EDUCATIONAL QUALIFICATIONS

Educational Qualifications	Number of Current Faculty	
Ph.D.	930	17%
Masters + 30	1,133	20%
Masters	2,625	47%
Bachelors	541	10%
Less than Bachelors	351	6%
TOTAL	5,580	

B. Conclusions From the Survey

Texas community/junior colleges leaders anticipate a shortage of faculty in the next five to 10 years. The reasons are only partially related to the number of students currently in Ph.D. programs, since only 17 percent of junior college faculty have Ph.D.s. Although many students teach at community/junior colleges while working on Ph.D.s and eventually are employed by universities, it is not a significant factor in the anticipated faculty shortages.

The survey completed by 42 Texas community/junior colleges indicates primary shortage problems already exist in health-related technical programs, math, science (biology, chemistry, physics), and a variety of specialty technical programs. Over half of the respondents to the survey identified low salaries and educational qualifications as major factors contributing to the current and anticipated faculty shortages for community/junior colleges. Another significant problem is hiring minority faculty. Recruiting minority faculty seems to be a problem in both vocational and academic disciplines and the lack of minority students in graduate programs will exacerbate this problem for many years. Both rural and urban colleges report problems with recruiting minority faculty.

V. THE SPECIAL PROBLEM OF MINORITY FACULTY

A. Ethnic Minority Faculty -- Trends and Projections

According to information presented in section III of this report, retirements, increases in enrollment coupled with significant decreases in doctoral production rates, declining numbers of new doctorates who plan a career in higher education are key factors that offer clear indications that institutions of higher education will be challenged to meet an increasing demand for new faculty on their campuses.

Projections regarding the potential availability of and need for ethnic minority faculty, however, reveals an even more critical problem: the under-representation of minority faculty in higher education.

Although in 1986 minorities represented 18 percent of the nation's undergraduate population, their percentage of the faculty population looked quite different. African Americans represented 4.1 percent (down from 4.4 percent in 1975), while Hispanics represented 1.7 percent (up from 1.4 percent in 1975). The modest representation of minorities in the faculty may be juxtaposed to demographic projections.

Between 1990 and 2020 the African American population will increase from 26.5 million to 44 million and the Hispanic population will increase from 14.6 million to 47 million (11). Without significant increases of minority faculty the representation gap will widen rather than narrow.

Participation rates in colleges of African Americans and Hispanics have consistently remained below that of whites. In 1986 the college going rate of 18-to-24-year-old whites was 28 percent, of African Americans 22 percent and of Hispanics 18 percent (10). The pool of potential minority faculty members will remain small as long as the low enrollment of minorities in higher education continues. The under-representation of minority faculty is "one of supply, flow into and through the academic pipeline, and minority faculty retention (6)."

A review of the doctoral degrees conferred nationally in 1988 indicates 805 doctoral degrees (3.5 percent) were earned by African Americans (down by 22 percent from 1978), and 594 (2.6 percent) were earned by Hispanics (up by 26 percent from 1978) (9).

An overall decline in doctorates awarded to all U.S. citizens coupled with the substantial decline in doctorates awarded to African Americans underscore predictions regarding shortages in the supply of doctorates. The data also suggest that while there were increases in the number of doctorates awarded to Hispanics,

the numbers are still fragile when compared with the total number of degrees awarded.

In Texas, 2.6 percent and 3.1 percent of the total doctoral degrees awarded in 1986-87 were awarded to African Americans and to Hispanics respectively. African Americans received 3.9 percent of the first professional degrees awarded, and for Hispanics this figure was 6.7 percent (12). In addition African Americans and Hispanics are pursuing, to a greater extent, doctoral degrees in professional areas than in academic disciplines. This may be due to the greater availability of financial aid in professional programs, but may also suggest that these groups are more interested in professional than in academic careers.

The disparities in Texas senior institutions between the composition of faculties and student enrollments can be seen in Tables VIII and IX.

TABLE VIII

COMPARISON OF ETHNICITY OF FACULTY AND STUDENT
TEXAS PUBLIC SENIOR INSTITUTIONS

	Percentage African American	Percentage Hispanic
Faculty in the Tenure-Earning Rank	5.5	3.4
Total Headcount Enrollment	8.2	13.0
Graduate Headcount Enrollment	5.4	6.3
Doctoral Headcount Enrollment	3.5	3.3

TABLE IX

COMPARISON OF ETHNICITY OF FACULTY AND STUDENTS
TEXAS PUBLIC JUNIOR AND COMMUNITY COLLEGES

	Percentage African American	Percentage Hispanic
All Faculty	4.8	8.4
All Students-Headcount	9.6	19.4

The data show clearly the shortage of African American and Hispanic faculty compared to enrollments, and as minority participation at the graduate level is low, the prospects for reaching parity of minority faculty with minority students is not bright.

B. Degrees conferred to Ethnic Minorities by Academic Discipline

Regarding degrees awarded by academic discipline, the American Council on Education (13) reported national data showing that doctoral degrees of African American doctoral recipients were awarded in Education (46 percent), Social Sciences (19.6 percent), Professional/other (9.7 percent) and Humanities (9.6 percent). For Hispanics the fields were primarily Education (25.6 percent), Social Sciences (23.3 percent), Humanities (15.5 percent), Life Sciences (14.1 percent) and Physical Sciences (11.6 percent).

In 1988, a total of fifty-one African Americans received doctoral degrees in Texas. The majority or 63 percent (32) were awarded in Education while six percent (3) were awarded both in Accounting and in Nursing. Four percent (2) earned degrees in Science and two percent (1) in Engineering. None received degrees in Mathematics.

Forty-nine doctoral degrees were awarded in Texas in 1988 to Hispanics. According to the Coordinating Board, among the Hispanic doctoral recipients, thirty percent (15) earned their doctorates in Education, eighteen percent (9) in the Social Sciences, two percent (1) in Business Administration and ten percent (5) in the Physical Sciences. No doctoral degrees were awarded in Mathematics and only one doctoral degree was awarded in Engineering.

C. Assessment

To assess the information derived from reports on population projections, enrollment projections, and current participation rates of minorities in higher education, one should distinguish replacement demand from enrollment demand.

> Replacement demand is determined by faculty retirement and the net migration into, and out of academic careers. Enrollment demand is determined by overall college enrollments and student-faculty ratios. In the 1970s and 1980s, replacement demand and enrollment demand were quite stable. In the 1990s, replacement demand will increase substantially as a result of the retirement of unprecedented numbers of faculty throughout the decade. Enrollment demand is projected to increase modestly, when the children of the "baby

boomers" begin college and, thus, further increase the demand for faculty (14).

Specific data on retirements and net migration in and out of academe for minorities are not available; one must draw inferences from the information provided. With regard to replacement demand, we noted in this section of the report that the number of minority Ph.D.s is actually and relatively small and of that group, the number pursuing careers in academe is even smaller; thus the supply of minority faculty is not being replenished. Understandably, as faculty are getting older, it is likely that many who are currently employed will soon be planning for retirement.

With regard to enrollment demand, one could project significant enrollment growth of ethnic minority students if measures could be taken to assure that minorities complete high school and enter college. Information and data reported in this section of the report confirm the low participation rates of ethnic minorities in postsecondary education (particularly at the graduate level), the underrepresentation of ethnic minority faculty and the need to develop a pool of scholars from which to recruit in responding to the demand for new ethnic minority faculty.

When one considers the minority population growth in the state, the graduate student participation patterns are discouraging and disturbing. Many institutions have adopted a rather frenetic approach to minority faculty recruiting. Numerous publications have described the "intents" of minority faculty recruiting efforts. Minority doctorate recipients are increasingly being offered higher incentives from colleges and universities and private industry.

Several institutions are establishing special minority fellowships, hiring mandates, and other measures aimed at recruiting minority faculty. Other institutions are looking from within to recruit minority faculty and are designing programs intended to attract and retain minority graduate students. In spite of such practices, the competition for minority faculty will likely intensify, given the laws of supply and demand.

In terms of faculty shortages, preliminary projections by this committee on faculty shortages indicated that Texas institutions will need to employ over 10,000 new faculty by the year 2006. However, it is clear that unless graduate education becomes a significant priority, relatively few minorities will be in the faculty employment pools. This could impact student enrollment and retention and leadership issues that could place universities on a collision course with the changing political representation of the state.

We have found as presented in these data that minorities are severely underrepresented in the faculty ranks and in graduate school in Texas (15). Academic job prospects for ethnic minorities now entering or thinking of entering graduate and professional school are brighter than they have been in many years. Texas, one of the most populous states in the sun belt, is undergoing dramatic demographic changes that will unquestionably influence economic, social, and public policy issues in the state. Institutions of higher education will play a critical role in the development and training of a work force which is projected to be substantially ethnic minority.

VI. CONCLUSIONS

Based on its study and the data printed in this report, the committee offers the following conclusions.

A. Projected growth in enrollments and an accelerated retirement rate will require that Texas hire significantly more new faculty annually than it has in the past.

B. At current levels of production, doctoral supply will fall short of demand. Existing shortages in certain fields will be exacerbated, and hiring in some fields in which the supply of prospective faculty has been adequate will become very competitive.

C. Increases in full-time faculty have not kept pace with enrollment increases, and unless hiring of new faculty accelerates, institutions will have to adjust by limiting enrollments, relying even more on part-time and/or differently credentialed faculty and limiting the program options they offer students.

D. Institutions will be forced to reexamine the criteria by which they hire and retain faculty.

E. Although the conclusions reached are based primarily on the supply-demand of doctorates and thus of direct impact primarily on senior institutions, a shortage of doctoral faculty in senior institutions will have an effect on community and junior colleges as they begin to compete for similarly qualified candidates.

F. The existing shortages of African American and Hispanic faculty is going to get worse, both in absolute numbers and relative to parity with student enrollments.

G. If Texas is to achieve a reasonable student/tenure-track faculty ratio, continue to compete for quality faculty in what is likely to become an increasingly difficult market and maintain access to higher education for its population, significantly higher levels of funding must be made available.

VII. RECOMMENDATIONS

In framing a set of recommendations, the committee cannot avoid the most obvious and important recommendation -- namely that the State provide funds for both salaries and benefits sufficient to attract and retain an adequate number of quality faculty. Unless that is done, other programs and innovations will have little impact on the problem. Nevertheless, the committee does make the following additional recommendations.

A. Institutions should become more efficient in their use of their faculty resources and increase output by:

1. Increased use of technology such as telecommunication and computers;

2. Sharing of faculty in specialized areas through joint appointments or other appropriate mechanisms;

3. Greater use of modified retirement programs to retain faculty in teaching roles;

4. Decreasing, where appropriate and consistent with the maintenance of quality, the time required to complete the Ph.D.;

5. Developing articulation agreements between doctoral and non-doctoral institutions -- particularly those with large minority enrollment -- to facilitate transfer into doctoral programs.

B. The State of Texas should do its share in the production of doctoral recipients by:

1. Increasing scholarship support for doctoral students;

2. Developing a graduate loan program with all or partial forgiveness for teaching in a Texas institution;

3. Continue to support the Research Enhancement Program, the Applied Technology Program and the Advanced Research Program as ways not only of providing research results but also of training doctoral students. Priority should be given ATP and ARP proposals which involve graduate students and provide graduate student support.

C. In addition to the items in B above, special initiatives must be undertaken directed at increasing the number of minority students who pursue graduate study. The State and the institutions should:

1. Increase the number of graduate fellowships available for minority students;

2. Establish a graduate loan forgiveness program for minorities to complete master's and doctoral degrees;

3. Develop summer research internship opportunities for minority students interested in graduate school;

4. Provide supplemental funding for faculty researchers who successfully recruit minority research assistants.

REFERENCES

(1) Bowen, W. G., & Sosa, J. A. Prospects for faculty in the arts and sciences. NJ: Princeton University Press.

(2) Lozier, G. G., & Dooris, M. J. Elimination of mandatory retirement: Anticipating faculty response. Planning for Higher Education, 17, 1-13.

(3) McGuire, M. D., & Price, J. A. (1990).

(4) Daigle, S. L., & Rutemiller, H. C. (1989). Projecting future faculty needs. Paper presented at the 29th Annual Forum of the Association for Institutional Research, Baltimore, MD.

(5) El-Khawas, E. Campus Trends, 1990. Washington, D.C.: American Council on Education.

(6) Brown, S. V. (1988). Increasing minority faculty: An elusive goal. Minority Graduate Education Project.

(7) Uribe, O., Jr., & Verdugo, R. R. (1989). A research note on the status and working conditions of Hispanic faculty.

(8) Texas Higher Education Coordinating Board. (1990). Enrollment Forecast 1990-2005. Study Paper 27.

(9) Summary Report 1988. Doctorate recipients from United States Universities. Washington, D.C.: National Academy Press.

(10) U. S. Department of Commerce, Series P-20 No. 443.

(11) Hodgkinson, H. I. (1985). All one system: Demographics of education. Kindergarten through graduate school. Washington, D. C.: Institute for Educational Leadership, Inc.

(12) Marks, J. L. (1990). SREB fact book on higher education 1990. Atlanta, GA: Southern Regional Education Board.

(13) Carter, D. J., & Wilson, R. (1989). Minorities in higher education. American Council on Education Eighth Annual Status Report.

(14) Gamson, Z. F., Finnegan, D. E., & Youn, T. I. K. (1991). Assessing faculty shortages in comprehensive universities. In The New American Scholar, Metropolitan Universities. An International Forum, 1(4), 87-98.

(15) Texas Higher Education Coordinating Board. (1989). Statistical Supplement.

APPENDIX A

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

ALL FACULTY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	10,273	11,054	11,252	11,437	11,756	12,311	12,891	
Retirements		445	625	832	857	1,041	1,183	4,983
"Quits"		627	638	649	667	698	731	4,010
Total Replacements		1,072	1,263	1,481	1,524	1,739	1,914	8,993
Additions for Growth		791*	198	185	319	555	580	2,628
Total Hires		1,863	1,461	1,666	1,843	2,294	2,494	11,621

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

BIOLOGY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	526	566	576	585	602	630	660	
Retirements		25	43	41	36	45	65	255
"Quits"		30	31	31	32	33	35	192
Total Replacements		55	74	72	68	78	100	447
Additions for Growth		40*	10	9	17	28	30	134
Total Hires		95	84	81	85	106	130	581

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

BUSINESS ADMINISTRATION

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	952	1,024	1,042	1,060	1,089	1,140	1,195	
Retirements		28	49	57	55	79	111	379
"Quits"		68	69	70	72	75	79	433
Total Replacements		96	118	127	127	154	190	812
Additions for Growth		72*	18	18	29	51	55	243
Total Hires		168	136	145	156	205	245	1,055

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

CHEMISTRY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	298	321	326	332	341	357	374	
Retirements		11	17	31	28	27	43	157
"Quits"		18	18	18	19	20	21	114
Total Replacements		29	35	49	47	47	64	271
Additions for Growth		23*	5	6	9	16	17	76
Total Hires		52	40	55	56	63	81	347

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

COMMUNICATION

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	162	174	177	180	185	194	203	
Retirements		9	11	16	15	12	12	75
"Quits"		11	11	11	12	12	13	70
Total Replacements		20	22	27	27	24	25	145
Additions for Growth		12*	5	3	5	9	9	43
Total Hires		32	27	30	32	33	34	188

* Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

COMPUTER SCIENCE

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	225	242	246	250	257	270	282	
Retirements		4	4	13	10	13	27	71
"Quits"		18	19	19	19	20	21	116
Total Replacements		22	23	32	29	33	48	187
Additions for Growth		17*	4	4	7	13	12	57
Total Hires		39	27	36	36	46	60	244

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

ECONOMICS

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	164	176	180	183	188	196	206	
Retirements		3	7	14	11	15	13	62
"Quits"		10	10	10	11	11	12	64
Total Replacements		13	17	24	22	26	25	127
Additions for Growth		12[a]	4	3	5	8	10	42
Total Hires		25	21	27	27	34	35	169

[a] Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

EDUCATION

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	1,069	1,148	1,168	1,188	1,221	1,278	1,339	
Retirements		42	93	125	132	104	111	607
"Quits"		60	61	62	64	67	70	384
Total Replacements		102	154	187	196	171	181	991
Additions for Growth		79*	20	20	33	57	61	270
Total Hires		181	174	207	229	228	242	1,261

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

ENGINEERING

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	1,005	1,081	1,100	1,119	1,150	1,204	1,261	
Retirements		41	49	77	83	108	108	466
"Quits"		66	67	68	70	73	77	421
Total Replacements		107	116	145	153	181	185	887
Additions for Growth		76*	19	19	31	54	57	256
Total Hires		183	135	164	184	235	242	1,143

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

ENGLISH

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	693	746	759	771	793	830	870	
Retirements		35	47	64	64	72	79	361
"Quits"		37	38	38	39	41	43	236
Total Replacements		72	85	102	103	113	122	597
Additions for Growth		53[a]	13	12	22	37	40	177
Total Hires		125	98	113	125	150	162	774

[a] Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

FOREIGN LANGUAGES

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	305	328	334	339	349	365	383	
Retirements		23	21	31	28	38	39	180
"Quits"		19	19	19	20	21	22	120
Total Replacements		42	40	50	48	59	61	300
Additions for Growth		23*	6	5	10	16	18	78
Total Hires		65	46	55	58	75	79	378

* Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

GERMANIC LANGUAGES

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	53	57	58	59	61	63	67	
Retirements		2	5	7	6	8	6	34
"Quits"		3	3	3	3	3	4	19
Total Replacements		5	8	10	9	11	10	53
Additions for Growth		4*	1	1	2	2	4	14
Total Hires		9	9	11	11	13	14	67

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

ITALIC LANGUAGES (EXCLUDING SPANISH)

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	85	91	93	95	97	102	107	
Retirements		5	6	9	7	13	13	53
"Quits"		6	6	6	6	7	7	38
Total Replacements		11	12	15	13	20	20	91
Additions for Growth		6*	2	2	2	5	5	22
Total Hires		17	14	17	15	25	25	113

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

SPANISH

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	128	138	140	142	146	153	161	
Retirements		13	7	13	12	14	15	74
"Quits"		7	7	7	7	7	8	43
Total Replacements		20	14	20	19	21	23	117
Additions for Growth		10*	2	2	4	7	8	33
Total Hires		30	16	22	23	28	31	150

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

GEOLOGY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	172	185	188	191	197	206	216	
Retirements		10	5	19	21	16	17	88
"Quits"		10	11	11	11	12	12	66
Total Replacements		20	16	30	33	28	29	154
Additions for Growth		13*	3	3	6	9	10	44
Total Hires		33	19	33	39	37	39	198

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

HISTORY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	347	373	380	386	397	416	435	
Retirements		19	24	19	37	43	48	190
"Quits"		21	22	22	23	24	25	137
Total Replacements		40	46	41	60	67	63	327
Additions for Growth		26*	7	6	11	19	19	88
Total Hires		66	53	47	71	86	82	415

* Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

MATHEMATICS

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	507	546	555	564	580	607	636	
Retirements		23	26	27	44	58	68	246
"Quits"		30	30	31	31	33	34	189
Total Replacements		53	56	58	75	91	102	435
Additions for Growth		39*	9	9	16	27	29	129
Total Hires		92	65	67	91	118	131	564

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

PHYSICAL SCIENCES--TOTAL

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	802	863	878	893	917	961	1,007	
Retirements		41	39	71	79	81	108	419
"Quits"		49	50	51	52	55	57	314
Total Replacements		90	89	122	131	136	165	733
Additions for Growth		61*	15	15	24	44	46	205
Total Hires		151	104	137	155	180	211	938

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

PHYSICS

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	230	247	252	256	263	276	289	
Retirements		12	11	13	23	25	35	119
"Quits"		14	14	15	15	16	17	91
Total Replacements		26	25	28	38	41	52	210
Additions for Growth		17*	5	4	7	13	13	59
Total Hires		43	30	32	45	54	65	269

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

POLITICAL SCIENCE

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	242	260	265	269	277	290	304	
Retirements		7	12	14	14	25	35	107
"Quits"		15	15	15	16	17	17	95
Total Replacements		22	27	29	30	42	52	202
Additions for Growth		18*	5	4	8	13	14	62
Total Hires		40	32	33	38	55	66	264

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

PSYCHOLOGY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	357	384	391	397	408	428	448	
Retirements		13	21	26	19	28	32	139
"Quits"		22	22	23	23	24	25	139
Total Replacements		35	43	49	42	52	57	278
Additions for Growth		27[a]	7	6	11	20	20	91
Total Hires		62	50	55	53	72	77	369

[a] Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

SOCIAL SCIENCES--TOTAL

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	1,036	1,115	1,134	1,153	1,185	1,241	1,300	
Retirements		43	64	68	83	115	122	495
"Quits"		63	64	65	67	70	74	403
Total Replacements		106	128	133	150	185	196	898
Additions for Growth		79*	19	19	32	56	59	264
Total Hires		185	147	152	182	241	255	1,162

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC SENIOR INSTITUTION
1991-2008

SOCIOLOGY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Tenure Track Faculty	149	160	163	166	170	179	187	
Retirements		7	13	10	12	16	11	69
"Quits"		9	9	9	10	10	11	58
Total Replacements		16	22	19	22	26	22	127
Additions for Growth		11[a]	3	3	4	9	9	38
Total Hires		27	25	22	26	35	30	165

[a] Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

APPENDIX B

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

ALL ACADEMIC FACULTY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	4,061	4,436	4,512	4,618	4,747	4,925	5,103	
Retirements		81	148	267	348	412	505	1,761
"Quits"		343	349	357	366	379	392	2,186
Total Replacements		424	497	624	714	791	897	3,947
Additions for Growth		*375	76	106	129	178	178	1,042
Total Hires		799	573	730	843	969	1,075	4,989

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

BIOLOGY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	281	307	312	320	328	341	353	
Retirements		0	7	22	26	39	40	134
"Quits"		24	24	25	26	27	27	153
Total Replacements		24	31	47	52	66	67	287
Additions for Growth		*26	5	7	9	12	12	71
Total Hires		50	36	54	61	78	79	258

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

ENGLISH

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	779	851	866	886	911	945	979	
Retirements		16	23	47	68	77	93	324
"Quits"		66	67	69	71	73	76	422
Total Replacements		82	90	116	139	150	169	746
Additions for Growth		*72	15	20	25	34	34	200
Total Hires		154	105	136	164	184	203	946

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

FINE ARTS

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	430	470	478	489	503	521	540	
Retirements		6	16	30	32	36	53	173
"Quits"		37	37	38	39	41	42	234
Total Replacements		43	53	68	71	77	95	407
Additions for Growth		*40	8	11	14	19	19	111
Total Hires		83	61	79	85	96	114	518

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

FOREIGN LANGUAGES

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	106	116	118	121	124	129	133	
Retirements		7	5	11	8	9	13	53
"Quits"		9	9	9	10	10	10	57
Total Replacements		16	14	20	18	19	23	110
Additions for Growth		*10	2	3	3	5	4	27
Total Hires		26	16	23	21	24	27	137

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

MATHEMATICS

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	417	456	463	474	487	506	524	
Retirements		4	20	27	32	53	61	197
"Quits"		35	36	37	38	39	41	226
Total Replacements		39	56	64	70	92	102	423
Additions for Growth		*39	8	11	13	18	18	107
Total Hires		78	64	75	83	110	120	530

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

PHYSICAL SCIENCES

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	227	248	252	258	265	275	285	
Retirements		5	7	10	20	23	37	102
"Quits"		19	20	20	21	21	22	123
Total Replacements		24	27	30	41	44	59	225
Additions for Growth		*21	4	6	7	10	10	58
Total Hires		45	31	36	48	54	69	283

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

PSYCHOLOGY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	359	392	399	408	420	435	451	
Retirements		15	19	24	31	29	33	151
"Quits"		31	31	32	33	34	35	196
Total Replacements		46	50	56	64	63	68	347
Additions for Growth		*33	7	9	11	16	16	92
Total Hires		79	57	65	75	79	84	439

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

SOCIAL SCIENCES

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	661	722	734	752	773	802	831	
Retirements		15	28	43	66	81	96	329
"Quits"		56	57	58	60	62	65	358
Total Replacements		71	85	101	126	143	161	687
Additions for Growth		*61	12	17	21	29	29	169
Total Hires		132	97	118	147	172	190	856

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

MISCELLANEOUS DISCIPLINES **

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	801	875	890	911	936	971	1,007	
Retirements		13	15	32	41	36	48	185
"Quits"		68	69	71	73	76	78	435
Total Replacements		81	84	103	114	112	126	620
Additions for Growth		*74	15	21	25	35	35	205
Total Hires		155	99	124	139	147	161	825

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

**Includes Agriculture, Architecture, Business Administration, Communications, Computer Science, Criminal Justice, Education, Home Economics, and Undetermined

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

ALL TECHNICAL-VOCATIONAL FACULTY

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	3,062	3,345	3,402	3,482	3,579	3,713	3,848	
Retirements		132	150	204	239	272	322	1,319
"Quits"		260	265	271	278	289	299	1,662
Total Replacements		*392	415	475	517	561	621	2,981
Additions for Growth		283	57	80	97	134	134	785
Total Hires		675	472	555	615	695	755	3,766

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

ANALYSIS OF ANTICIPATED FACULTY STAFFING AND HIRING
TEXAS PUBLIC COMMUNITY JUNIOR COLLEGES
1991-2008

ALL FACULTY: ACADEMIC AND TECHNICAL-VOCATIONAL

	1988-90	1991-93	1994-96	1997-99	2000-2002	2003-2005	2006-2008	TOTAL 1991-2008
Total Faculty	7,123	7,781	7,914	8,100	8,326	8,638	8,951	
Retirements		*213	298	471	587	684	827	3,080
"Quits"		605	616	630	648	672	696	3,867
Total Replacements		818	914	1,101	1,235	1,356	1,523	6,947
Additions for Growth		658	133	186	226	312	312	1,827
Total Hires		1,476	1,047	1,287	1,461	1,668	1,835	8,774

*Cumulative Total for five year period 1988-93 assuming little or no increase in faculty during the period 1988-1990.

APPENDIX C

SURVEY RESULTS FROM TEXAS PUBLIC SENIOR AND COMMUNITY COLLEGES

1. "Does your institution have difficulty in hiring qualified full-time faculty?" Of the 42 responses received, 29 (69 percent) answered "yes" and 13 (31 percent) answered "no." Eight of the 13 negative responses came from small rural colleges.

2. Specify those vocational credit, vocational non-credit, and academic disciplines which are experiencing difficulty in hiring qualified full-time faculty. Verbatim responses are listed below.

Vocational credit -- list discipline(s)

Accounting	1
Air Conditioning	1
Automotive Technology	2
Industrial--Auto	
Computer Science	5
Court & Conference Reporting	1
Criminal Justice	3
Law Enforcement	
Drafting	1
Electronics	3
EMS	1
Health Occupations	4
Allied Health	
Industrial Electronics	1
Machining	3
Machine Shop	
Medical Laboratory	1
Nursing	24
Pharmacy	1
Physical Therapy	3
Radiation Technology	1
Respiratory Therapy	2

Sound Technology	1
Vocational non-credit -- list discipline(s)	
Medical-related (EMT)	1
Mold Making	1
Tool & Die	1
Robotics	1
Academic -- list discipline(s)	
Accounting	2
Computer Science	1
Economics	1
Engineering	2
English	1
Government/Political Science	2
Math	11
Reading	2
Science	10
Biology, Chemistry, Physics	
Speech	2

Health-related fields comprise 62.7 percent of vocational credit courses designated, and math/science comprises 61.8 percent of the academic courses designated.

3. "Do you foresee a shortage of full-time faculty in the next five to ten years?" Of the 41 responses, 33 (80.5 percent) were positive, while eight (19.5 percent) were negative. The negative responses were evenly split between colleges in rural and urban areas.

4. "Specify those vocational credit, vocational non-credit, and academic disciplines in which you foresee a shortage." Verbatim responses are listed below.

Vocational credit -- list discipline(s)	
All vocational areas	1
Accounting	2
Air conditioning	1
Automotive Technology	2

Computer Technology	7
Court Reporting	1
Criminal Justice	2
Dental Hygiene	1
Diesel Mechanics	1
Drafting Technology	2
Electronics	3
Emergency Medical Services Tech.	1
Engineering Technology	2
Health Occupations	5
Industrial -- Auto	1
Industrial Technology	1
Instrumentation	1
Medical Lab Technology	2
Nursing	23
Physical Therapy	1
Radiologic Technology	2
Registered Nurse Education	1
Respiratory Therapy	2
Surgical Technology	1
Vocational Nurse Education	1

Vocational non-credit -- list discipline(s)

Advanced Manufacturing	1
All	1
Medical-related (EMT)	1
Mold Making	1

Academic -- list discipline(s)

Accounting	3
Business	2
Computer Science	2
Economics	1
Engineering	3

English	1
Government/Political Science	1
Math	15
Reading	3
Science fields (all)	17

Of the 24 vocational credit disciplines listed, health-related fields constitute 59.7 percent of those listed. Of the 10 academic disciplines, math/science disciplines comprised 66.7 percent.

5. "What are the factors causing the full-time shortage?" In addition to low salaries, location, qualifications, and work experiences (listed in Table Six), the following items were listed.

   -- Competition with 4 year universities and private sector.
   -- In vocational -- the industry demand.
   -- Masters Degree with 18 graduate hours in teaching field.
   -- Less people interested in teaching.
   -- Insufficient numbers of people now entering the community/junior college teaching ranks.
   -- Lack of MSN's.
   -- Leading edge technology jobs for this area creates industrial high demand with commensurate salary.
   -- Professional accreditation requirements (such as State Nursing Board requiring a Master's in Nursing.
   -- Competition with the private sector and limited number of candidates.

6. "Does your institution have difficulty hiring sufficient numbers of qualified minority faculty?" Forty (95.2 percent) of the 42 respondents answered "yes," with two (4.8 percent) responding "no."

7. "If yes (to question No. 6), in which of the following areas do you have difficulty hiring sufficient numbers of qualified minority faculty? Vocational or Academic?" Thirty-one (77.5 percent) selected both vocational and academic. Six (15.0 percent) selected only academic and three (7.5 percent) selected only vocational.

8. "Indicate the educational qualifications of your current faculty." Three of the 42 respondents did not complete this portion of the questionnaire. The tabulation of those who responded is listed in Table Seven.

   In addition, there were two general comments.

We are the smallest college in Texas. Our average faculty member has been here ten years. We do not, therefore, hire very many faculty members and do not experience the difficulty that may indeed be a reality.

All of our non-credit faculty are part-time, but we see some problems here too.

Texas Higher Education Coordinating Board

Nancy Atlas, Chair
Houston

Charles C. Sprague, M.D., Vice Chairman
Dallas

Carolyn R. Bacon
Dallas

W. Mike Baggett
Dallas

Herbert L. Butrum
Houston

Frank Cahoon
Midland

H.M. Daugherty, Jr.
El Paso

Cipriano F. Guerra, Jr.
San Antonio

Lauro G. Guerra, M.D.
McAllen

Rene Haas
Corpus Christi

Lawrence E. Jenkins
Austin

Andrew Melontree
Tyler

Martha Miller
Texarkana

Greg Mitchell
Amarillo

Patricia S. Prather
Houston

Kathryn A. Priddy
Dallas

Ray E. Santos, M.D.
Lubbock

Mary Beth Williamson
San Antonio