TABLE OF CONTENTS
FOR
VOLUME 2
November 8-9, 2007

3. U. T. System: Annual report on research and technology transfer

Research and Technology Transfer

Annual Report

H. Keith McDowell, Ph.D.
Vice Chancellor

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2007

1

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Overview

- Research
  - National Rankings
  - Research Expenditures
  - Market Share
  - Distinguished Faculty Awards
- Technology Transfer
  - Texas Emerging Technology Fund
  - Technology Transfer Activities
  - National Rankings
- Research & Technology Transfer Initiatives

2

RESEARCH

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Change in National Rankings, Total Science & Engineering Research Expenditures 2001-2005

	Public Institutions		Public & Private Institutions	
Institution	**Change 01-05**	2005 Rank	**Change 01-05**	2005 Rank
U. T. Arlington	**3**	144	**6**	203
U. T. Austin	**1**	20	**1**	32
U. T. Dallas	**31**	122	**45**	171
U. T. El Paso	**(11)**	149	**(15)**	209
U. T. Pan American	**5**	243	**17**	342
U. T. San Antonio	**9**	157	**18**	220
U. T. Southwestern Medical Center – Dallas	**6**	28	**3**	46
U. T. Medical Branch – Galveston	**9**	63	**8**	93
U. T. Health Science Center – Houston	**(9)**	68	**(12)**	98
U. T. Health Science Center - San Antonio	**(5)**	70	**(9)**	101
U. T. M. D. Anderson Cancer Center	**15**	21	**18**	34

Note. Parentheses indicate a decline in rankings. Source: WebCASPAR database, National Science Foundation, Survey of Research and Development Expenditures at Universities and Colleges, accessed March 2007.

4

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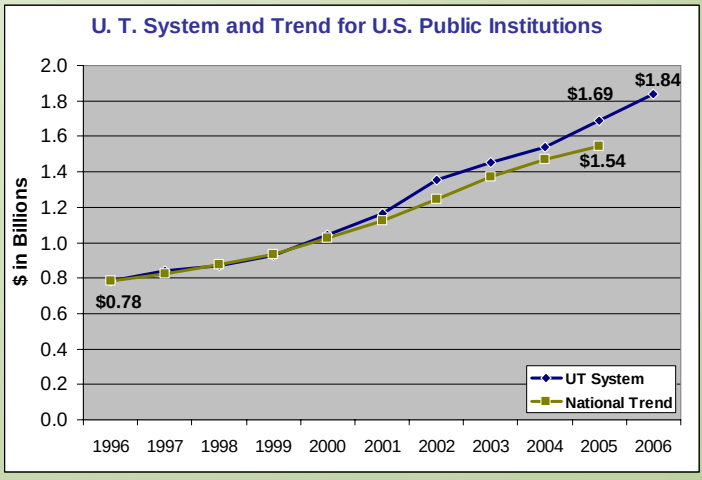
Total Research Expenditures Over Time



Note. The national trend is computed using equal starting points in 1996 and adding the average percentage increase in research expenditures for all U.S. public universities and colleges each year (NSF). The U. T. System line reflects actual data (THECB).

5

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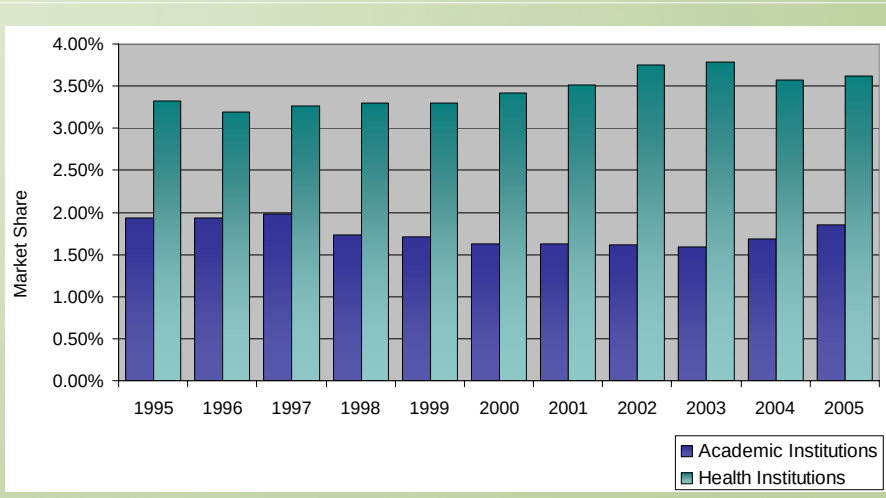
U. T. System Market Share of Total U.S. Public Institution Research Expenditures



Source: WebCASPAR database, National Science Foundation, Survey of Research and Development Expenditures at Universities and Colleges, accessed March 2007.

6

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Research Capacity: Distinguished Faculty Awards

U. T. System has 41
National Academy of Sciences members

Institution	Cumulative NAS Members	Average Number NAS Members of Peers
U. T. Austin	20	33
U. T. Dallas	2	1
UTSWMC	17	29
UTHSCH	2	15

Source: U. T. System Accountability and Performance Report, 2007; peer comparisons: awards membership directories, accessed 4/07.

7

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Research Capacity: Distinguished Faculty Awards

U. T. System has 51
National Academy of Engineering members

Institution	Cumulative NAE Members	Average Number NAE Members of Peers
U. T. Austin	50	20
U. T. Dallas	1	5

Source: U. T. System Accountability and Performance Report, 2007; peer comparisons: awards membership directories, accessed 4/07.

8

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Research Capacity: Distinguished Faculty Awards

U. T. System has 29
Institute of Medicine members

Institution	Cumulative IOM Members	Average Number IOM Members of Peers
UTSWMC	17	31
UTMB	4	14
UTHSCH	5	17
UTHSCSA	2	7
UTMDA	1	14

Source: U. T. System Accountability and Performance Report, 2007; peer comparisons: awards membership directories, accessed 4/07.

9

TECHNOLOGY TRANSFER

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10

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Texas Emerging Technology Fund

A $200M fund created to expedite the development and commercialization of new technologies and to recruit the best research talent in the world

Program	Total ETF Awards in Texas	Awards Received by U. T. System Institutions	% Funds Awarded to U. T. System Institutions
Research Superiority	$35M	$20M	56%
Commercialization	$29M	$26M	90%
Research Matching	$17M	$12M	70%
Total	**$81M**	**$58M**	**71%**

Source: Texas Governor's Office, 8/31/07; only includes awards with signed contracts

11

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Emerging Technology Fund Awards to the U. T. System

Awards for the Acquisition of Research Superiority

Institution	Research Area	Amount Awarded
U. T. Medical Branch - Galveston, U. T. Health Science Center - Houston, U. T. M. D. Anderson Cancer Center	**NanoHealth** Mauro Ferrari	$ 2.5M
U. T. Tyler	**Indoor air quality** Jan Sundell	$ 3.75M
U. T. San Antonio	**Information security** Ravi Sandhu	$ 3.5M
U. T. Arlington, U. T. Austin, U. T. Dallas	**Nanoelectronics** e.g., Yves Chabal (1 of 8)	$10M

Source: U. T. System Institutions; only includes awards with signed contracts

12

3. U. T. System: Annual report on research and technology transfer (cont.)

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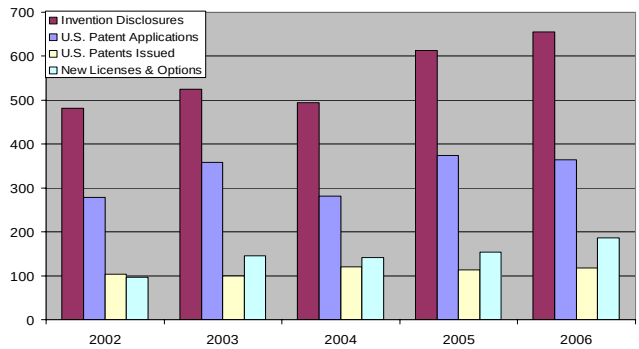
Technology Transfer Activities Over Time



Multiyear Totals 2002 - 2006	
Invention Disclosures	2,768
U.S. Patents Issued	553
Licenses	724
Gross IP Revenue	$151M
Start-up Companies	66

Source: Texas Higher Education Coordinating Board Technology Development and Transfer Survey

13

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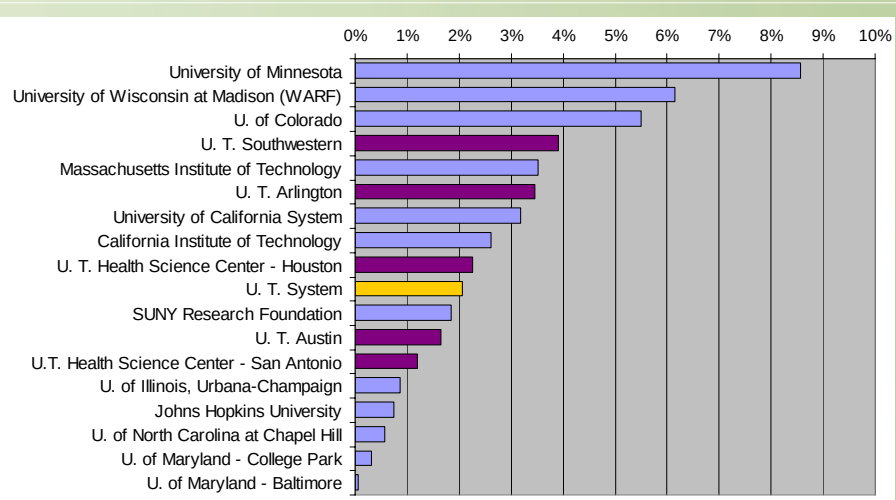
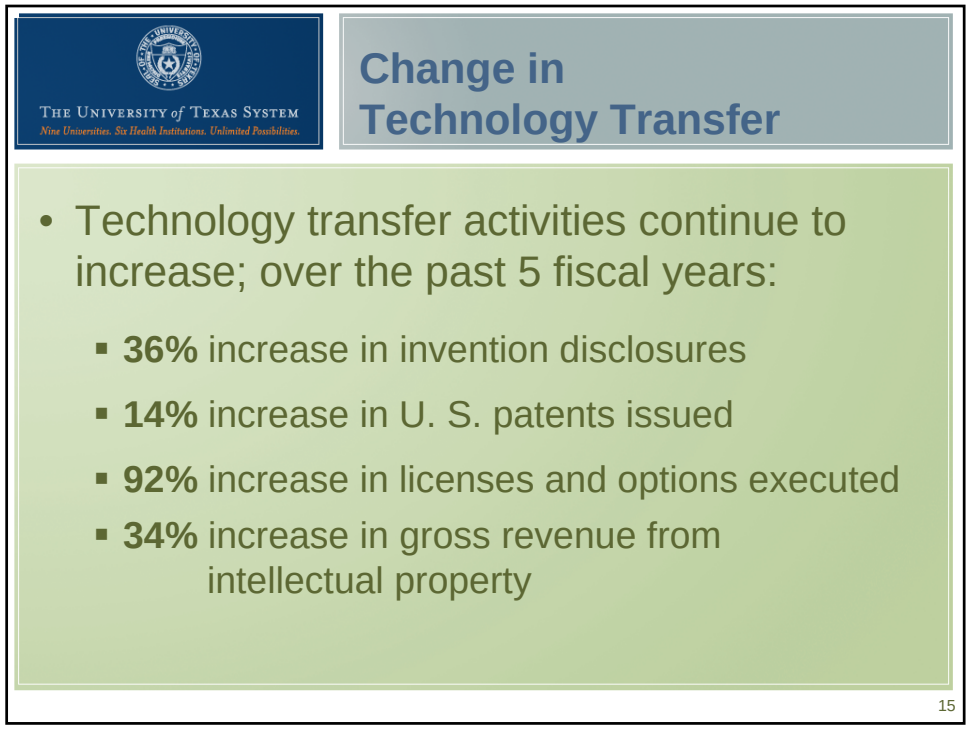
Gross Intellectual Property Revenue as a Percentage of Research Expenditures



Source: Association of University Technology Managers Licensing Survey: FY 2005.

14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Change in Technology Transfer
• Technology transfer activities continue to increase; over the past 5 fiscal years:
▪ 36% increase in invention disclosures
▪ 14% increase in U. S. patents issued
▪ 92% increase in licenses and options executed
▪ 34% increase in gross revenue from intellectual property
15


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U. T. System Rankings: Technology Transfer
• 1st in the world in number of biotech patents (Milken Institute, 2006)
• 2nd as a "patent powerhouse" reflecting quality and quantity of U.S. patents (The Scientist, 2005)
• 4th in the nation in U. S. patents issued (USPTO, 2006)
• Five institutions rank in the top 100 on the Milken Institute Technology Transfer and Commercialization Index
▪ U. T. Austin
▪ U. T. Southwestern Medical Center – Dallas
▪ U. T. Medical Branch – Galveston
▪ U. T. Health Science Center – Houston
▪ U. T. Health Science Center – San Antonio
16


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Office of Research & Technology Transfer Initiatives
Promoting a culture of innovation and entrepreneurship
• Key Collaborative Research Initiatives
▪ Research Collaborations Initiative
▪ Texas Alliance for Nanotechnology (TxAN)
▪ Texas Nanoelectronics Research Initiative
▪ Sandia research peer review and research collaborations
▪ Texas Advanced Computing Center (TACC)
• Key initiatives in technology transfer
▪ Regional Technology Transfer Initiative
▪ Technology transfer data management system and data standards
▪ Research and Technology Transfer Showcase
▪ Chancellor's Entrepreneurship & Innovation Awards
17


OFFICE OF RESEARCH AND TECHNOLOGY TRANSFER
Promoting a culture of innovation and entrepreneurship
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18

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report

The University of Texas System Report from the Task Force on Doctoral Education and the Postdoctoral Experience

June 2007

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Table of Contents

Executive Summary

The University of Texas System Board of Regents has invested heavily to make the UT System more competitive and to increase student success. To fully realize the benefits of that initial investment, the System and the state of Texas must strategically invest in doctoral and postdoctoral education essential to achieving these goals.

Doctoral and Postdoctoral Education is an investment in human capital that will pay important dividends in the future by providing:

- Educated and principled leaders for business, government, and universities.
- Discovery, innovation, and understanding – which is the basis of competitiveness.
- Leadership in research, technology, and intellectual property.
- A highly educated populace with critical-thinking and problem-solving skills essential for creativity and innovation.

If this investment in human capital is made, the Task Force on Doctoral Education and the Postdoctoral Experience believes that not only will the UT System become an even more important educational leader in today's global knowledge-based economy but will also more closely reflect the changing demographics of the state as the System realizes its goal of increasing the number and diversity of outstanding, high-quality graduates of its doctoral and postdoctoral programs.

Charge to the Task Force

In 2006, The UT System unveiled an ambitious strategic plan for the coming decade that was designed to help ensure that the System, Texas, and the nation would be competitive in the 21st century. The plan called for a Task Force on Doctoral Education and the Postdoctoral Experience to be convened to consider how to:

- recruit, retain, and graduate more doctoral students and postdoctoral scholars;
- enhance the value and contributions of these programs to their institutions, the UT System, and the state; and
- increase the competitiveness and prestige of the UT System's research, education, and service programs.

To this end, a task force with representatives from all UT System institutions that offer Ph.D. programs was appointed in June 2006, and obtained widespread input from all System institutions. Meetings were held in Austin, Dallas, El Paso, Houston, and San Antonio to obtain first-hand input from administrative leaders, faculty, doctoral students, and postdoctoral scholars from campuses which have Ph.D. programs. Representatives from UT Brownsville, UT Pan American, UT Permian Basin, and UT Tyler also met with the group, as did Dr. Raymund Paredes, Commissioner of the Texas Higher Education Coordinating Board.

Before finalizing this report, the task force distributed drafts for review by the institutional presidents, other campus and System leaders, and the Faculty Advisory Council. A preliminary report was made to the Board of Regents.

Summary of Key Recommendations

<u>The UT System must</u>:

- Prominently address doctoral and postdoctoral education in major UT System planning efforts.
- Hold institutional leaders accountable for establishing and maintaining competitive doctoral and postdoctoral programs in line with System plans and institutional missions
- Provide health benefits equivalent to those received by faculty and staff for all full-time, salaried doctoral students and postdoctoral scholars.
- Increase the recruitment and success of outstanding, diverse doctoral students and postdoctoral scholars.
- Conduct rigorous reviews of new proposals and ongoing programs that involve external peers.
- Facilitate and support the development of trans-disciplinary research educational programs.

UT System institutions must:

- Explicitly include doctoral and postdoctoral education in planning, budget preparation, evaluation, and external communications.
- Disseminate expectations, commitments, and anticipated timelines for their doctoral and postdoctoral programs.
- Conduct rigorous peer reviews with external reviewers of new proposals and ongoing programs.
- Include expectations and rewards for doctoral and postdoctoral education in tenure and promotion guidelines and support development of required skills.
- Facilitate and support the development of trans-disciplinary research and educational programs.
- Teach critical-thinking and problem-solving skills that prepare graduates for a wide range of careers.
- Incorporate doctoral students and postdoctoral scholars more fully into the community of scholars on university campuses.

In addition to recommendations, this report includes several key appendices to assist the UT System and institutions, guide the implementation of recommendations, and aid programmatic reviews. The material in these appendices, especially the sections on *Best Practices and Characteristics of Competitive Programs* and *Impediments and Critical Areas for Improvement*, were critical in determining the Task Force's recommendations.

Key Outcomes of Implementing Task Force Recommendations

- Increase the competitiveness of the UT System by ensuring institutions adopt best practices
- Increase the number of outstanding, diverse doctoral and postdoctoral students at UT System institutions by a combination of
  - summer undergraduate research programs,
  - Regents' fellowships for doctoral students,
  - incentives for recruiting the most talented, capable postdoctoral scholars, and
  - institutional grants to create innovative, trans-disciplinary programs for doctoral and postdoctoral students.
- Increase the recruitment of full-time doctoral and postdoctoral students in an intensely competitive market and ensure their success by providing health benefits comparable to those received by faculty and staff.

Enhancing Doctoral Education and the Postdoctoral Experience - An Ongoing Process of Providing Human Capital

For these initial recommendations to have a lasting effect, doctoral and postdoctoral education must become an integral and ongoing component of System and institutional strategic plans and must be linked to budget planning to provide adequate, stable support. The Task Force recommendations are but the beginning of what must be a continuing process to achieve the UT System's strategic goals.

Faculty members are the leaders in education, research, and discovery. If the Task Force recommendations are to have the intended effects, faculty must be involved in the planning, implementation, and ongoing review of doctoral and postdoctoral education. Faculty must also be assured of the intellectual freedom, flexibility, and academic environment to foster the innovation and creativity essential for maximal effectiveness and competitiveness.

Involving faculty along with the administrative leaders at the institutional and System level in the implementation of the recommendations will enable the UT System to achieve its strategic goals of increasing student enrollment and success, attracting outstanding faculty, becoming highly competitive for research support and productivity, and improving the economy and health of Texas, as well as providing the human capital necessary for leadership and advancement.

I. Background and Charge

In 2006, The University of Texas System Board of Regents unveiled an ambitious strategic plan for the coming decade that was designed to help ensure that the UT System, Texas, and the nation would be competitive in the 21st century. Strong doctoral and postdoctoral programs are necessary for achieving the System's strategic goals; providing the highly trained scientists, engineers, humanists, and leaders for our universities, government, foundations, and the private sector; and achieving and maintaining a high degree of competitiveness in today's knowledge-based economy. The Board of Regents thus convened the Task Force on Doctoral Education and the Postdoctoral Experience in June 2006, with the following charge:

> The charge to the Task Force is to consider doctoral and postdoctoral programs within the UT System and make recommendations to the Chancellor and Board of Regents to:
>
> 1) Identify the most critical areas for improvement in the quality of doctoral and postdoctoral programs within the UT System and recommend appropriate actions.
> 2) Recruit, retain, and graduate more doctoral students and postdoctoral scholars in support of *The UT System Strategic Plan 2006-2015* and the state's *Closing the Gaps* initiative.
> 3) Increase at the K-16 levels awareness of and interest in graduate and postdoctoral programs in all fields and make careers more attractive in areas where critical shortages are currently recognized (e.g., science, math, and engineering) and others that might be identified as high priority in the future by UT System and individual institutions' strategic plans.
> 4) Enhance the value and contributions of doctoral and postdoctoral programs to their institutions, the UT System, and the state.
> 5) Increase the competitiveness and prestige of the UT System's research, education, and service programs.

Prior to developing recommendations the Task Force felt it was essential to seek widespread input from faculty, students, and administrative leaders at all UT System institutions. Meetings were held in Austin**,** Dallas, El Paso, Houston, and San Antonio with members of these groups from all UT System institutions which have Ph.D. programs. Representatives from UT Brownsville, UT Pan American, UT Permian Basin, and UT Tyler also met with the Task Force. In addition, Dr. Raymund Paredes, Commissioner of the Texas Higher Education Coordinating Board, spoke to the Task Force about his views on graduate education.

Although increasing the enrollment, diversity, and success of doctoral and postdoctoral students raises the important question of regional and institutional program locations, the Task Force did not address this issue since it was outside the charge. Furthermore, the Task Force felt the UT System institutions are more qualified to propose programs for their individual campuses. The Task Force emphasizes that these issues should be a major element of both the System and institutional strategic plans which are part of the Task Force recommendations. All institutions may aspire to doctoral and postdoctoral programs within their approved missions, but all programs, without exception, must adhere to best practices and undergo rigorous, meaningful review to ensure that they possess the characteristics of competitive programs the Task Force has provided in Appendix 1.

II. Introduction

There is a need to enhance public understanding of doctoral and postdoctoral education and what these programs contribute to the individual, to the global economy, and to society at large. There are a number of measures to benchmark System performance against, and many of these are already being collected.[1, 2] To develop and maintain the programs that are needed for the System, state, and nation to be highly competitive, the System must examine what it is doing, what its most competitive peers are doing, and what is needed to close that gap.

As part of its discussions, the Task Force considered several different models of doctoral and postdoctoral education. For example, the English system of graduate education utilizes a fixed-time end point rather than a required product end point. Another model is the Cold Spring Harbor Graduate School, a small, highly specialized program that focuses exclusively on the biomedical sciences and graduates Ph.D.s in far less time (four years) than most other institutions.

The model currently in place in UT System and most peer institutions is clearly not the only effective one. However, the Task Force unanimously agreed that it is the only one that is feasible for the foreseeable future for the UT System and other institutions of comparable size, scope, complexity, mission, and mechanisms of support.

There are several key elements that are essential to highly competitive doctoral and postdoctoral programs that should be noted at the outset:

- Programs must have a critical mass of faculty actively engaged in research with a stable base of funding, adequate infrastructure, and an administration that understands and supports research and research training.
- Competitive programs are expensive to establish and maintain; increasing the competitiveness of existing programs will require additional funding.
- New programs should only be initiated if they are in line with UT System and institution strategic plans and if adequate and sustainable funding for them is identified.
- As emphasized in the state's *Closing the Gaps* report, doctoral and postdoctoral programs cannot meet the state's workforce needs without significantly increasing diversity to more closely reflect the state's growing and changing population.

Before generating the recommendations in the report, the Task Force felt it was important to learn from discussions with UT System faculty, administrators, and students about what they considered the best practices and the impediments to competitive programs (these are provided in Appendices 1 and 2, respectively). To address these concerns and help the UT System to develop the strong doctoral and postdoctoral programs that are called for in its strategic plan, the Task Force formulated a series of broad recommendations at both the System and institution level. The recommendations focus on over-arching issues that apply to most programs at all UT System institutions.

The Task Force also defines the key features of competitive programs and presents guidelines and best practices that will ensure that our doctoral and postdoctoral programs possess these requisite features. The recommendations together with the guidelines may also provide a useful framework for evaluating current programs and proposals for new programs or substantive changes in existing ones. The Task Force strongly recommends that programs that do not meet these standards be eliminated outright or seriously scrutinized for subsequent elimination if deficiencies are not remedied during a defined probationary period.

Along with the characteristics of competitive programs, the Task Force has appended a synopsis of some of the major impediments to competitive doctoral and postdoctoral programs as identified in discussion with administrators, faculty, doctoral students, and postdoctoral scholars. Not all impediments are present at every UT System institution, but, when present, they do have a serious negative impact. This information should serve as another aid for System, presidents, and other leaders to determine whether these impediments may exist and take corrective actions if necessary.

A university's overall competitiveness and reputation for scholarship and research are determined to a very substantial degree by the quality and scope of its doctoral and postdoctoral programs. For example, key

factors of institutional reputation and competitiveness include the number of doctoral and postdoctoral training grants, individual fellowship awards, and amount of extramurally-sponsored research which is performed largely by doctoral students and postdoctoral scholars. The National Research Council's Survey of Graduate Programs is a national, peer-based review of doctoral programs that is one of the most widely used indicators of the overall quality and competitiveness of a university within the academic community.

With the proper encouragement, planning, and support, doctoral and postdoctoral programs can flourish within the System and increase its stature, effectiveness, and prestige in all areas. This is inherently worthwhile but is also a critically important element to attract faculty members who can best obtain external grant support, make breakthrough research discoveries, provide the best leadership and service, and further enhance the competitiveness and prestige of the UT System. Such faculty members in turn further enhance the System's competitiveness for recruiting doctoral and postdoctoral students. This interplay creates a continuously upward momentum the world's greatest universities enjoy.

> *"When Southwestern loses a brilliant faculty recruit to one of our prestigious competitors, it is not money, not research space or environment, and not quality of our faculty that is lacking. It is most often a fear in young faculty that they will not be able to recruit high quality graduate students in the same way that they can in Boston and San Francisco."*
>
> Alfred Gilman, M.D., Ph.D.
> Provost, UT Southwestern, and Nobel Laureate

III. The Nature of the Ph.D. Degree and Postdoctoral Education

The Ph.D. is a Research-Based Degree

The doctoral degree represents the highest level of knowledge and achievement in a particular field of study. There are three types of doctoral degrees: (1) "professional" doctorates such as medicine (MD) or law (JD); (2) "applied" doctorates such as education (EdD), public health (DPH), and nursing practice (DNP); and (3) the Doctor of Philosophy (Ph.D.) degree that is awarded for advanced studies in many different disciplines.

The purpose of the professional doctorate is to train skillful practitioners of a discipline; the degree does not usually require extensive original research. Applied doctorates conduct research in a very specific setting that may be aimed at solving a problem encountered primarily in that context (e.g., a particular school district or geographic area). The purpose of the Ph.D., which is the focus of this report, is to prepare scholars to conduct research and/or use research-related skills in academic, government, business, or other settings. The emphasis of the Ph.D. is to prepare scholars with the training and expertise to make independent intellectual contributions to their field. As such, it requires that every student conduct independent research culminating in a dissertation that is presented to the faculty and must be defended in public.

The Doctoral Education Program

Students who are about to complete their bachelor's degree, or have previously done so, may apply for admission to graduate school. Many apply for enrollment immediately after completing college, but others may enter the workforce, go on active military duty, or engage in other activities before seeking admission. Generally, most applicants to graduate school are in their early-to-late 20s but can be of any age.

Unlike undergraduate admissions in which a student applies to the university and only later selects a major area of study, graduate school applications are made to a specific department or program from which students select a more specific area within a year or two after matriculation. Students often apply to a specific university because they wish to conduct their doctoral research under the supervision of particular faculty members who are recognized research leaders in the applicant's field of interest. The pool of very top students is relatively small, and the competition to identify and recruit the best students is fierce at both the state and national levels.

During their first several years in a doctoral program, "pre-candidacy" students attend lecture courses to gain an overview of their field, its historical underpinnings, key concepts, and major gaps in knowledge. They also take courses that teach research skills and experimental methods; attend seminars about current research in their field; learn how to make written and oral presentations of research findings; study ethical issues pertinent to research and their discipline; and begin receiving hands-on research training.

After obtaining a solid grounding in the field and an introduction to research, students take the candidacy exam, a written and oral examination designed to test the student's breadth of knowledge in his or her discipline and to assess the student's readiness to conduct independent research. After passing the exam, the post-candidacy student is qualified to begin an original research study, or doctoral dissertation. Successful completion of advanced coursework, the initial research training, and the candidacy exam are important milestones that are monitored within the program to help ensure that the student is making timely and appropriate progress toward the Ph.D.

From this point onward the student spends most of his or her time performing the dissertation research under the guidance of a faculty advisor who is an expert in that area and has agreed to oversee the student's work. An advisory committee, typically made up of four or five additional faculty members, also helps assess progress and guide the student's work. When the advisor and committee believe the student has completed a meritorious research study, the student must publicly defend his or her research. If the advisor and advisory committee determine the research makes an important original contribution to the discipline, the student is permitted to write the dissertation and submit it for final approval.

The results of the dissertation research are typically presented at professional meetings and then published as research articles or in books. The publication of the doctoral student's original research increases the reputation and competitiveness of the student, the advisor, and the institution. The research performed by

doctoral students helps attract yet more research funding and professional recognition and awards and increases the institution's ability to recruit even more of the best faculty members.

Pre-candidacy education typically takes several years, and the dissertation research may then require two to six additional years depending upon the field, the difficulty of the research problem, etc. Consequently, individuals are typically in their late 20s or early 30s when they receive the degree, are frequently married, and may have children. Concerns such as housing, child-care, health benefits, life insurance, etc., are often critical for doctoral students, especially those whose spouses may also be graduate students and for couples that may have children.

Since the dissertation is original, creative research, students and faculty advisors accept a degree of uncertainty about the time it will take to complete. Although difficult to predict in advance, in most cases, the overall time to complete a Ph.D. varies from four to eight years. The success rate and time-to-degree of doctoral students within the UT System is comparable to that at other leading universities.

While enrolled in a doctoral program, most students receive financial support by means of fellowships, teaching assistantships, or research assistantships funded by their mentors' research grants. Often, students are not permitted to work outside the university. The amount varies considerably based on program and institution. Graduate students with teaching assistantships play an essential role in undergraduate education, often teaching classes and laboratories. Students with research assistantships and fellowships do the research studies for faculty grants. Universities could not operate effective research or undergraduate teaching programs without the contributions of doctoral students.

Postdoctoral Education

New Ph.D.s may enter the workforce or seek additional, specialized research training in postdoctoral positions that are typically designed to last from two to five additional years but do not culminate in a formal degree. These are temporary appointments that enable the scholars to focus almost entirely on their research and serve as a transition period to independent, permanent career positions. Because of the length of time it takes to complete doctoral and postdoctoral education, many people do not obtain their first permanent position until they are in their mid- to late-30s, or even their early 40s.

Postdoctoral education is more highly focused on a very specific research project and provides a much greater degree of independence than Ph.D. education. Postdoctoral education is common — and in some disciplines expected — for those whose long-range goal is to obtain a faculty position at a research intensive university or a research leadership position in a private company or government agency. The use of postdoctoral appointments varies not just by discipline — common in the sciences, less so in the humanities — but by institution; not all institutions use the same titles, formats, and structure.

Postdoctoral scholars (or fellows, trainees, or simply "post-docs") often come from other institutions, and are thus a rich source of new ideas and expertise for a university. They may also serve as teachers, mentors, and role models for doctoral students and undergraduates. Their salaries are less than those of faculty members, and their presence greatly enhances the intellectual environment of an institution in a cost-effective manner.

Postdoctoral stipends are generally in the range of $30,000 to $50,000 per year, which is modest given the candidates' extensive education and the important contributions that they make to the research programs of their universities. They may be supported from their mentor's research grants, or they may obtain their own fellowships from a government agency or private foundation to provide their salary support.

Postdoctoral scholars work on the projects funded by their mentor's research grants, so their efforts are essential to the success, productivity, and continued funding of faculty projects. Because postdoctoral scholars already have advanced research experience obtained during their Ph.D. education, they typically make some of the most important contributions to their mentor's research. As with graduate students, the research performed by postdoctoral fellows is presented at professional meetings and published in research articles and books, bringing recognition to the postdoctoral scholar, mentor, and institution.

A postdoctoral scholar's mentor, rather than the academic department or university, has typically assumed primary responsibility for education and salary support.[3] Nevertheless, universities as a whole are

increasingly recognizing the great value that these scholars have for research programs, and institutional best practices require that universities accept responsibility for providing postdoctoral scholars with career development opportunities and for establishing minimum standards for salaries and benefits.[4] This is increasingly important because the competition to attract the most talented, capable individuals is fierce and these benefits are highly attractive to prospective scholars. Along with graduate students, postdoctoral fellows are absolutely essential for the most competitive research programs and are a direct measure of the size and growth of its advanced research programs[1].

IV. The Value of Graduate Education: Investing in Texas and the Nation

Education, especially doctoral and postdoctoral education, is an investment in human capital. In today's global environment, knowledge powers the economy. Without serious, strategic investment in graduate education, the economy of Texas will soon be outpaced by the economies of other states and emerging countries, impacting the lives of all Texans. Investing in graduate education is, therefore, essential to the future of Texas and the nation.[5, 6]

The combination of high-quality faculty and talented graduate students and postdoctoral fellows drives graduate education and research in the UT System. Faculty provide the knowledge, mentorship, and guidance that doctoral students and postdoctoral scholars need to discover new knowledge; to integrate and apply that knowledge to new fields of study; and to pass on that knowledge to the next generation of students, scholars, scientists, and the public. Graduate students and postdoctoral scholars are the infrastructure that enables successful research at universities and health institutions. Without a critical mass of quality doctoral students and, where appropriate (largely in the sciences), postdoctoral scholars, high-quality, productive research is impossible, regardless of the facilities available.

The concept of graduate education as a process of storing and passing on knowledge is outdated. The value of graduate and postdoctoral education lies in the direct impact that the students, postdoctoral scholars, and faculty have on society and within the university. Graduate programs are the engines of change and of scientific, economic, and societal advancement. Doctoral education must adapt to the needs of humans, the environment, and technology, just as research funding is adapting to those needs. Furthermore, this education must also be pro-active — the desire in Texas must not be just to keep up but rather to lead.

The UT System should be a leader in redefining graduate education in terms of value. Faculty, programs, universities, health institutions, and the System itself should be judged in accordance to the value added by faculty, doctoral students, and postdoctoral scholars in the following areas:

1. Education of leaders not only in traditional disciplines but also in biomedical fields, new technology, business, government, industry, and humanitarian efforts;
2. Discovery, innovation, and understanding of breakthrough ideas;
3. Development of new research disciplines and technologies; and
4. Establishment of an educated populace that will ensure the success of the future.

To maximize impact and better reflect a changing U.S. population and a more global market, diversity must be a major component of all four values. Recruitment of doctoral students and postdoctoral scholars brings the opportunity — and responsibility — to increase the diversity of both current students and the future faculty who are being educated.

Doctoral education naturally draws students from around the nation and the world to Texas. International students are important for the state and the nation, particularly in STEM fields, because 80 percent remain in the United State as permanent residents and citizens. In 2005, 85-90 percent of doctoral recipients from China and India (the two largest contributors of U.S. international students) planned to stay in the United States.[7] Because of its geographic proximity and close existing ties, UT System institutions should seek mutually beneficial arrangements with Mexico and Latin America. With proper support, Texas and adjoining Mexican states have the potential to become the quintessential intellectual crossroads for bi-directional exchange of ideas, research, doctoral and postdoctoral students, and faculty, as well as commercial products between the U.S. and Latin America.

Supporting these values will increase the national and international reputations of the UT System universities, health institutions, and individual programs. These enhanced reputations will make it easier for Texas to attract new industry, as well as to recruit increasing numbers of high-quality faculty and students. The communities in which the universities and health institutions operate will experience increased prestige and the other collateral benefits such as quality cultural events, educational opportunities, and improved health services which come from first-rate universities. The increased earnings of those with doctorates will impact the state and local economies. The Texas Higher Education Coordinating Board reports that individuals with doctoral degrees earn on average over $3 million over their lifetime, compared to $1.8 million for those with only bachelor's degrees.

The Education of Leaders

A university is a community of scholars dedicated to advancing knowledge through research and educating the next generation of scholars. More and more today, leading executives and government officials have Ph.D.s. Technology companies, businesses, governmental organizations, biomedical enterprises, etc., need the entrepreneurial and critical thinking skills inherent in doctoral and postdoctoral education.[8] And, universities themselves cannot exist — cannot continue to educate the increasing numbers of students or conduct the complex research called for by leaders at the state and federal level — without a continuous replenishing of the existing faculty. And even as they work toward their degrees and becoming tomorrow's leaders, doctoral students are already playing a major role in teaching undergraduates and conducting research. Without them, universities would be unable to function.

Nearly one-third of the full-time faculty in Texas are over 55 years old. If the cultural, scientific, medical, and economic advances that our universities are making are to continue, these faculty must be replaced. Moreover, if the state is to reach its goal of closing the gaps and graduating hundreds of thousands of new students, the number of faculty teaching at colleges and universities must not only be greatly increased but also diversified to reflect the population of Texas.

Discovery, Innovation, and Understanding

A major contribution of the UT System to the competitiveness of the Texas economy is the creation and extension of knowledge that is currently taking place at the universities and health institutions in the System. In a knowledge-based economy, the System must capitalize on this advantage.

Cross-disciplinary research and, more importantly, trans-disciplinary research (research that transcends traditional disciplines) offer unparalleled opportunities to probe the unknown and to discover and understand new frontiers of knowledge. The UT System actively encourages strategic, faculty-driven collaborations among universities and health institutions; furthermore, the System has encouraged and facilitated the growth of new, ground-breaking doctoral programs. These actions have positioned the institutions and programs within the System at the leading edge of innovation.

Doctoral education, with its emphasis on individual creative research, encourages people to probe the unknown by taking calculated risks. At universities and health institutions, even a research project that does not yield the expected result can often lead to entirely different discovery and innovation. Tenure allows faculty the independence to experiment and to pioneer new techniques and knowledge.

Innovation depends upon bringing independent, diverse minds together. A steady infusion of new graduate students and postdoctoral scholars drives the engine of discovery. With the continuous influx of new understanding, universities and health institutions are uniquely poised to ensure that Texas as well as the nation are able to successfully compete in the global marketplace of products and ideas.

Research and Technology

Research and graduate education are intricately intertwined in the university — one cannot exist without the other — and both need to support each other if either is to be successful. Research laboratories become the classrooms as new technology is produced and new discoveries are made, often by bright graduate students and postdoctoral scholars.

The research at universities and health institutions has fueled local, state, and national economies. Industries have collaborated with institutions to produce life-saving technologies and improve communication through electronic means. Discoveries in the labs have become products in households. As the National Academies pointed out in "Rising above the Gathering Storm," technological change has been responsible for 85 percent of the growth in per-capita income in the United States (p. 3), and Texas must be ever vigilant to remain at the cutting edge of technology and research.

The UT System ranks fourth in the nation in patents — these patents are products of the work being done by researchers, doctoral students, and postdoctoral scholars at UT System universities and health institutions and of the education that is taking place at these institutions. Without continued and increased investment

in graduate education, the economy of Texas would become stagnant, and the state would not be able to attract and retain businesses and talented entrepreneurs.

Technology transfer benefits not only businesses but the entire state by generating new income and additional tax revenue. While the link between technology transfer and economic development is increasingly better understood and the subject of much attention, without basic research there would be no commercialization of technology. Universities, especially university infrastructure and personnel aimed at doctoral education, are primary producers of both basic and applied research. As Jorn Erselius, managing director of Garching Innovation which organizes technology transfer from the Max Planck Institutes to businesses in Germany has pointed out, major inventions — those which alter the course of an industry or have a profound impact on the world — are almost always derived from the results of basic research (EMBO reports, 2006). Texas must increase its strength in the basic research arena, generating increasing amounts of scientific discoveries and intellectual property.

Basic research and technology transfer is only one of the many benefits from doctoral and postdoctoral education at UT System institutions. Strong research initiatives at Texas' universities and health institutions attract human capital to the state in the form of researchers, postdoctoral scholars, and graduate students (as well as undergraduate students who want a degree from a first-rate, nationally renowned university). Moreover, strong research initiatives help to invigorate and retain the diverse demographic population already in Texas. Students and faculty alike want to be where the cutting edge really is the cutting edge.

Educated Populace

The salaries and lifetime earnings of those who achieve Ph.D.s are obviously higher than those who only obtain a bachelor's degree,[9] but those earnings are only a small (though important) advantage of graduate education. Intellectual collegiality and the acceptance of diverse viewpoints are important elements for doctoral research, and the analytic skills that doctoral students develop serve them throughout their lifetime, not only in the workplace but also in making everyday decisions.

At one time in America, having a high school education was considered a tremendous achievement. Later, having a bachelor's degree was considered the minimum requirement for many jobs. As society evolves, as knowledge advances, and as technology becomes more and more sophisticated, the value of a Ph.D. increases. Obviously, not everyone needs a doctoral degree, but those who do earn doctoral degrees are highly committed leaders in their professional and living communities. The benefits of the investments that institutions have made in the students and that the students have made in the institutions are incalculable in dollar terms — these benefits will determine the future of Texas and of the nation.

V. The Future of Doctoral Programs

To resist creative change and innovation in today's academic climate is to court disaster even if one's current programs are high quality. Resting on one's laurels without actively seeking innovation and improvement will not attract the best faculty or the best students, will not develop the most competitive programs, and will not drive institutions to aspire to greatness or work effectively to achieve it.

Major research universities are all looking to the future and asking similar questions about new program development and changes in existing programs: What do we need to do in order to (continue to) attract an outstanding, diverse faculty and student population, compete for funding, and ensure that graduates find success in the job market? What are the nature and context of the next generation of areas for education and research where we must invest our resources?

Clearly, UT System academic and health institutions must constantly be looking for creative, effective, productive, and marketable doctoral education trends to remain contemporary and competitive. There are a number of general areas of consideration for future development of new programs that will put UT System on the cutting edge of research and education.

About 25 years ago, a new trend toward more cross- and trans-disciplinary research emerged to challenge the traditional premise that the best way to educate graduate students was concentrating in both concept and technology in very defined disciplinary areas. Since then, many classical programs have been replaced with trans-disciplinary, or thematic, programs that provide education and experience in more than one discipline or set of technologies.

Even though this transition to trans-disciplinary programs has been ongoing for many years, there still remain many areas with room for improvement or growth. And, as science and technology and our society expand and grow more complex, there are areas that are still waiting to be discovered. Institutions — and the UT System — must remain both vigilant in watching for these emerging areas and active in creating new ones in areas where there is already strength.

Doctoral-Doctoral Programs. In this area, two (or more) traditionally separate doctoral programs come together. UT System should encourage institutions to demonstrate creativity in program design, making connections — both within institutions themselves and with external partners — between disciplines that will lead to new ways of thinking about a problem.

Doctoral-Professional Programs. In this second type of trans-disciplinary program, a professional discipline such as medicine, dentistry, law, or business merges with doctoral studies in more fundamental disciplines. This leads to practitioners with a better understanding of research and the impact of new knowledge on the profession and to researchers with a better understanding of the application of knowledge. In the end, the effectiveness of these programs will hinge on the ability of the graduate to make a contribution to the knowledge/technological base of the professional discipline.

Doctoral-Translational Programs. In this type of programmatic development, the key rationale for the program is the translation or application of basic scientific research to practical issues. Health institutions are combining their efforts with research at academic universities in areas such as engineering, hard science and math, and especially the social sciences and humanities, in attempts to improve the translation of science from the research bench to the bedside and then to the community. Another sphere of translational, or applied, research for potential program development is in the area of biotechnology — where the merging of biology and several types of engineering are the congealing points for new programs.

Whenever it seems that every possible type of educational program has been established, something very innovative appears. As society changes and its needs evolve, education and research too must evolve to discover the knowledge that will help society meet new challenges. UT System institutions must establish and maintain an intellectual environment where new programs can be planned and piloted in a tenacious effort to achieve a leadership position in the nation/world.

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report (cont.)

Ultimately, we must challenge our faculty and institutions, allow them the freedom to experiment, and enable them to inspire and excite the next generations of scholars. Not every idea or new program will be wildly successful, but some will, and those will make us be seen as operating on the cutting edge of education and research and as a great place in which to invest time, energy, and future prospects. This is the vision that underlies the Task Force recommendations, and one UT System institutions can achieve by adopting them.

VI. Recommendations for Doctoral and Postdoctoral Education in the UT System

Doctoral education differs significantly from undergraduate education, and postdoctoral education is yet more different. The value that this education brings – to the individual, the program, the institution, the region, the state, and the nation – is indisputable. And the future of education and research is already here; UT System must actively pursue a leadership position to recruit and retain the highest quality faculty and students.

To help UT System meet this potential – to compete for talented, highly capable students, to work on cutting-edge research, deliver the best patient care, and to educate the men and women that will be tomorrow's leaders – this Task Force has created a list of 10 major recommendations in four general areas:

A. UT System and Institutional Planning and Organization
B. Recruitment and Success of Doctoral Students and Postdoctoral Scholars
C. Faculty and Educational Programs
D. Mentoring, Professional Skills and Socialization, and Career Development

As noted previously, the Task Force arrived at these recommendations after extensive focus group discussions with faculty, administrators, and students from the UT System. Each recommendation has significant value and would independently enhance doctoral and postdoctoral education. However, implementation of all the recommendations would create enormous synergy. Taken as a set, and provided the necessary resources, they would propel the institutions of the UT System to a new level of competitiveness and excellence within the coming decade.

Summary of Major Points of Emphasis

The UT System must:

- Prominently address doctoral and postdoctoral education in major UT System planning and accountability efforts.
- Provide health benefits equivalent to those received by faculty and staff for all full-time doctoral students and postdoctoral scholars who receive stipends or salaries.
- Develop mechanisms to increase the recruitment and success of outstanding, diverse doctoral students and postdoctoral scholars.
- Use external peers to conduct rigorous reviews of proposals for new and ongoing doctoral programs.
- Facilitate and support the development of trans-disciplinary research educational programs.

UT System institutions must:

- Explicitly include doctoral and postdoctoral education in planning, budget preparation, evaluation, and external communications.
- Disseminate expectations and commitments, including major milestones and anticipated timelines for progression to beginning independent dissertation research (i.e., candidacy) and completion of degree requirements.
- Use external peers to conduct rigorous reviews of proposals for new and ongoing doctoral programs.
- Include expectations and rewards for doctoral and postdoctoral education in tenure and promotion guidelines for faculty members and support the ongoing development of required skills.
- Facilitate and support the development of trans-disciplinary research educational programs.
- Ensure that doctoral and postdoctoral education prepares graduates for a wide range of careers, professional environments, and trans-disciplinary interactions and efforts.
- Incorporate doctoral students and postdoctoral scholars more fully into the community of scholars on university campuses.

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report (cont.)

Recommendations

A. UT System and Institutional Planning and Organization

1. **Doctoral and postdoctoral education must be prominently addressed in major UT System planning and accountability efforts.**
   - The UT System must develop a strategic plan for doctoral and postdoctoral education that addresses state and System needs, the costs and financing of these programs, and the adequacy of legislative support provided by formula funding and other mechanisms for education in all approved institutional programs.
   - The UT System must require that its institutions include doctoral and postdoctoral education in compacts, accountability reports, presidential work plans, and any institutional strategic plans. Particular attention should be paid to the adequacy and stability of resources and financial support for both ongoing and proposed new programs.
   - Knowledge and experience in doctoral and postdoctoral education must be included as a criterion for selection of institutional presidents, and the evaluation of presidents and other institutional leaders must include meaningful input from graduate faculty, doctoral students, and postdoctoral scholars.
   - The UT System must develop a central resource to identify and disseminate information relevant to doctoral and postdoctoral education, to coordinate system-wide activities, and to share best practices and available resources. The System should be a catalyst for development of innovative programs and collaborations to support its strategic goals.
   - The UT System Office of External Relations must establish a continuing effort to inform leaders in government, industry, the philanthropic community, and the general public about the value and importance of doctoral and postdoctoral education.
   - When institutions identify employment practices and policies that hinder the recruitment and support of doctoral and postdoctoral employees, The UT System Office of General Counsel must lead efforts to revise System and legislative policies and practices that have a negative impact.

2. **Doctoral and postdoctoral education must be explicitly included in institutional planning, budget preparation, evaluation, and external communications.**
   - Doctoral and postdoctoral education programs must be included (explicitly or implicitly) in mission and vision statements, and explicitly in institutional goals, appropriate public documents (e.g., catalogs and websites), and external communications.
   - In planning and evaluation, particular attention must be paid to the adequacy and stability of resources and financial support for both ongoing and proposed programs, and to rigorous evaluation of the quality of graduate and postdoctoral education. Resources must be adequate to ensure programs will be competitive with peer institutions.
   - Institutions that provide or plan to provide a significant amount of postdoctoral education must have a postdoctoral office with designated responsibility and authority.
   - The graduate faculty, leaders of postdoctoral programs, doctoral students, and postdoctoral scholars must have meaningful input into strategic plans, compacts, and other major institutional planning activities.
   - Institutional planning must explicitly address recruitment and success of underrepresented minorities in doctoral and postdoctoral education programs.

B. Recruitment and Success of Doctoral Students and Postdoctoral Scholars

3. Institutions must disseminate expectations and commitments, including major milestones and anticipated timelines for progression from matriculation to post-candidacy and beginning independent dissertation research through completion of degree requirements.

- Graduate faculties should develop clear, written statements of expectations and commitments for both faculty members and doctoral students and postdoctoral scholars.
- These expectations and commitments should be prominently displayed in institutional materials, provided to prospective students, and discussed jointly by faculty members and students when they matriculate and at key, defined points in doctoral and postdoctoral education programs.

4. All UT System institutions must provide health benefits equivalent to those received by faculty and staff for all full-time doctoral students and postdoctoral scholars who receive stipends or salaries.

- The UT System must lead efforts to remove the 90-day waiting period and restore full state funding for health benefits of doctoral students who work 20 or more hours a week that were in place prior to the 78th Texas Legislature.
- Health care benefits must include counseling, mental health services, and maternal health benefits.
- UT System and institutional appointment and employment policies must not decrease health benefits of doctoral students and postdoctoral scholars who are awarded individual fellowship or training grant support and must ensure that loss of benefits is not an impediment to obtaining these awards.
- The UT System should consider if it would be cost effective to include graduate students and postdoctoral scholars in faculty and staff health insurance plans and/or to develop a System-wide plan(s) that would include them.

5. The UT System must develop mechanisms to increase the recruitment and success of outstanding, diverse doctoral students and postdoctoral scholars.

- In order to increase and diversify the pool of outstanding applicants, the UT System is encouraged to continue efforts to develop a database of undergraduates enrolled at all UT System institutions who are prospective doctoral students, to expand it to include undergraduates at other state and U.S. universities, and to develop a comparable database for doctoral students at UT System institutions who are prospective postdoctoral scholars.
- The UT System must provide financial support for summer research and other programs that increase the number of Texas residents well prepared to enter doctoral programs and attract outstanding residents and non-residents to doctoral programs at UT System institutions. These should be competitive programs that target high-priority areas identified in System strategic plans, and all UT System institutions with doctoral programs should be eligible to apply. It is recommended that support be provided annually for a minimum of 500 participants.
- Institutions should develop financial and educational support mechanisms for capable students from diverse and traditionally underserved backgrounds who may require additional time and preparation to reach post-candidacy status and begin independent doctoral research.
- The UT System must develop a highly competitive program of individual "Regents' Fellowships" to attract the most outstanding undergraduates from Texas and elsewhere to UT System institutions for doctoral research studies that support the System's strategic goals. At least 200* new four-year fellowships must be awarded annually to elevate the UT System to the most competitive level.

* This number represents approximately 10% of total doctoral students enrolled at UT System institutions. It was felt that this level of increase was required to have a significant impact on the overall competitiveness of UT System institutions.

- The UT System must develop a highly competitive program to attract the most outstanding Ph.D. graduates in the world to UT System institutions. A minimum of 100* new two-year awards must be made annually to elevate the UT System to the most competitive level.
- The UT System should coordinate state, national, and international marketing efforts to increase the recognition of doctoral and postdoctoral education opportunities at its institutions as the quality of UT System programs is not always recognized and this factor impedes recruitment of the most talented and capable students.

C. Faculty and Educational Programs

6. The UT System and its institutions must conduct rigorous reviews of current programs as well as proposals for new programs.

- Initial institutional- and subsequent System-level reviews must include rigorous evaluation by highly qualified, credible reviewers from outside the institution.
- Reviews should establish that programs are in line with System and institutional strategic plans and that adequate and stable funding and resources are available.
- Reviews should verify by objective criteria that ongoing programs have a critical mass of productive research faculty, an adequate research infrastructure, an appropriate curriculum, and a critical mass of qualified students and postdoctoral scholars as appropriate.
- Reviews should verify that institutions have a sufficient support system and infrastructure to meet the professional, career development, and individual needs of doctoral students and postdoctoral scholars.

7. Institutions must include expectations and rewards for doctoral and postdoctoral education in tenure and promotion guidelines for faculty members and support the ongoing development of required skills.

- Relevant promotion and tenure guidelines and job descriptions must recognize contributions to educational programs including didactic instruction, research supervision and advising, and professional development and socialization. These guidelines should also be used in performance evaluations.
- Institutions should provide assistance for faculty members to acquire needed skills. This should explicitly include financial support for faculty members at all career stages to acquire new skills and training to enable them participate effectively in research and doctoral and postdoctoral education.

8. The UT System and its institutions should facilitate and support the development of trans-disciplinary research educational programs.

- The UT System should provide funding to develop and support trans-disciplinary education programs for doctoral students and postdoctoral scholars in priority research areas identified in System strategic plans. Funding should be provided for at least two major programs each year in areas identified as high priority in the UT System Strategic Plan (e.g., in the 2006-2015 Strategic Plan these areas were Health Research in Cancer, Infectious Diseases, and Diabetes; Drug Diagnostics and Development; Security Issues; Energy; National Labs, e.g., Sandia; Information Technology; Nanotechnology and Nanoelectronics).
- Institutions should develop administrative procedures and reward systems that explicitly recognize educational and research contributions of faculty members and academic units to trans-disciplinary programs and remove administrative impediments to these activities.

* This number represents approximately 10% of the estimated number of postdoctoral scholars at UT System institutions based on NSF data, and is again the number the Task Force believes is required to have a transformational effect on collective UT System programs.

D. Mentoring, Professional Skills and Socialization, and Career Development

9. Doctoral and postdoctoral education must teach graduates critical thinking and problem solving and prepare them for a wide range of careers, professional environments, and trans-disciplinary interactions and efforts.

- Institutions should make training available to enhance grant, publication, and other professional writing; oral communications and presentations; teaching; and professional, leadership, and management skills needed to effectively lead a wide range of programs and a diverse workforce.
- Institutions must provide advising to make doctoral students and postdoctoral scholars aware of the full range of professional careers beyond traditional academic careers and must aid with job-seeking skills and strategies.
- Opportunities to attend and present at professional meetings should be encouraged.
- All doctoral students and postdoctoral scholars must receive training in ethics and professional behavior.
- Alumni tracking and surveys should be used to evaluate long-term career success for program evaluations.

10. Incorporate doctoral students and postdoctoral scholars more fully into the community of scholars on university campuses.

- Institutions must establish formal conduits for interaction between doctoral students, postdoctoral scholars, faculties, administrators, and institutional leaders.
- Faculty members must be able to obtain needed information and skills and to incorporate them into their research and educational efforts to communicate, mentor, effectively supervise, and productively interact with diverse groups of students and faculty in a wide range of disciplines.
- Institutions must include doctoral students and postdoctoral scholars in governance as appropriate (e.g., a spot on standing committees) and in evaluations of faculty, programs, administrative structures and services, and institutional leaders.
- Institutions and programs should establish mechanisms to recognize mentoring and career development activities and include doctoral students and postdoctoral scholars in the design of the process and identification of faculty to be recognized.
- Faculty and administrators must treat doctoral students and postdoctoral scholars with the respect shown to colleagues and welcome them into the community of scholars.

This report includes several appendices relevant to these 10 recommendations. Two that were previously mentioned, *Guidelines and Best Practices* and *Impediments and Critical Areas for Improvement,* can aid UT System, institutions, and individual programs in implementing recommendations and assist them in future planning. *Cost Estimates for Implementation of Recommendations* illustrates new funding that would be needed to implement recommended programs for summer undergraduate research, Regents' doctoral fellowships, incentives for recruitment of postdoctoral scholars, grants to establish new trans-disciplinary training programs, and provision of health benefits. Also included is *Background and Benchmarks: Graduate and Postdoctoral Education* to provide a historical perspective and current examples of quality indicating benchmarks from other leading institutions.

VII. The Next Step: A UT System Strategic Plan for Graduate Education

Implementation of some of these recommendations could begin in a relatively short time without the need for substantial new resources. For example, UT System and institutions could more explicitly include doctoral and postdoctoral education in planning documents, many of which are updated on an annual or biannual basis. Another over-arching theme that permeates several recommendations is the need for rigorous and meaningful peer review of programs at all levels — the will to adopt this practice is more important than a substantial increase in funding. While these examples are not trivial issues and some planning effort would be required, implementing these and other recommendations could begin soon after adoption.

Implementing other recommendations would require substantial increases in funding, culture changes within the System and institutions, new facilities and infrastructure modifications, or other significant changes that require substantial planning time and resources. The timing of implementation of specific recommendations will thus be variable.

Recommendations dealing with the UT System's strategic planning deserve special mention. Implicit in the formation of this Task Force was that the report would be the starting point for development of a UT System strategic plan for doctoral and postdoctoral education as called for in the Board's strategic plan. At the institutional level, strategic planning is more focused on specific programs and the unique aspects of each campus, but at the System level a strategic plan would emphasize principles to provide a more overall level of guidance. Examples might include:

- Commitment to quality and competitiveness
- Provision of adequate and stable resources
- Mandating rigorous program reviews that involve both external peers and internal colleagues
- Diversity and inclusiveness
- General guidelines for overall System growth and enrollment
- Retention, success, and time to degree or program completion for doctoral students and postdoctoral scholars
- Ensuring that metrics and accountability are in place and evaluated regularly
- Providing broad guidelines for determining institutional missions
- Regional considerations in plans for doctoral and postdoctoral education
- System policies that impact doctoral and postdoctoral education

Many of these features would apply to all programs, but a strategic plan will depend in some ways on the System's long-term goals and aspirations. For example, what strategic areas does the System want to strengthen and/or develop? What is a realistic timeframe for such developments? What are the most important factors that motivate the current and rising generations of doctoral students and postdoctoral scholars? How can we prepare our faculty and institutions to understand and apply these drivers appropriately? What are the learning styles and preferences of future generations of research scholars? Do we have the infrastructure in place to support and capitalize upon these learning styles? To what degree should regional considerations affect the location of new doctoral and postdoctoral programs?

To initiate the strategic planning process we recommend that the UT System plan and develop a system-wide symposium with invited national and international leaders in doctoral and postdoctoral education, as well as UT System participants, to further support development of a strategic plan for these programs. This symposium would then be a recurring event to highlight UT System's commitment to becoming a global leader in this arena and a means to implement the recommendation that the quality of our doctoral programs be more widely marketed in the U.S. and around the world. At the same time, it would provide a forum for UT System institutions to share ideas and best practices, to develop mutually beneficial partnerships, and become more visible leaders in doctoral and postdoctoral education.

As emphasized earlier in the report, encouraging innovation and creativity in doctoral and postdoctoral education and maintaining a dialogue and examination of our programs in the spirit of continuous quality enhancement must be an ongoing process for all institutions and should include System leadership and

involvement. The overall purpose of this report is to identify ways in which the UT System can initiate major improvements in graduate education in the state of Texas by collecting best practices so that the System is prepared to take the next step of developing a strategic plan by 2008.

This plan must set forth specific initiatives to expand and enhance doctoral research and education and the postdoctoral experience and will call for specific action items to fulfill those initiatives. A strategic plan, in and of itself, will not ensure success; therefore by 2009 (before the next legislative session), an implementation plan with a realistic budget and timeline must be put in place to make certain that there is a clear path and substantial means to serve the educational and research needs of Texas in today's creative, knowledge-based economy. Only then will the UT System be positioned to achieve its strategic goals of enhancing student success; improving the diversity of students and faculty; increasing research, global competitiveness, and technology transfer; and improving health in Texas.

The development of a UT System Strategic Plan for Doctoral and Postdoctoral Education is the next critical step on the pathway to enhancing competitiveness, but even the best plan will not produce a significant impact without another essential ingredient — the graduate faculty. As emphasized by the Council of Graduate Schools, "The quality of the graduate faculty is the single most important factor in the establishment and maintenance of an excellent program leading to the Ph.D. degree."[10]

Sustained excellence requires that faculty, doctoral students, and postdoctoral scholars be involved in planning and evaluation as noted throughout this report's recommendations. The graduate faculty must also play a key role in recognizing new opportunities, developing new programs, and participating in the academic governance in their institutions. Therefore, graduate faculty members should be encouraged to be as innovative and creative in the educational arena as in their research, and they must be allowed to do so. Doing so will invigorate the communities of scholars within the UT System and make our institutions places where the most talented, motivated students, the most outstanding senior faculty, and the most capable individuals at all levels in between will want to come. This is the future the Task Force envisions once the recommendations are implemented.

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report (cont.)

APPENDICES

APPENDIX 1

Guidelines and Best Practices for Building and Maintaining Competitive Doctoral and Postdoctoral Education Programs

A number of excellent doctoral and postdoctoral programs currently exist at UT System institutions. They have produced outstanding graduates who have made important contributions in many fields and brought credit and recognition to UT System. However, the state and System are now faced with major demographic shifts, fierce competition for decreasing federal resources, and a rapidly changing global economy. This report makes a number of recommendations intended to apply broadly to the UT System and all of its institutions, both academic and health-related.

From our discussions with faculty, administrators, and students, it became clear that realizing the benefits of the Task Force recommendations would require that certain basic commitments and features be in place at institutions and within academic programs. This appendix defines the key features of competitive programs and makes suggestions to ensure that all UT System's doctoral and postdoctoral programs possess them in order to obtain maximum benefit from the Task Force recommendations.

This appendix provides a useful guide to aid institutions and the System in evaluating proposals for new programs and the ongoing review or substantive changes in existing ones. These desired features apply broadly to research-based Ph.D. programs in all fields and at all institutions, although there may be others that apply to limited subsets of programs or disciplines.

While this report was in preparation, the UT System Student Advisory Committee independently recommended that a set of best practices be developed for graduate education at UT System institutions. While the following set of practices was intended to apply specifically to research-based *doctoral and postdoctoral* programs, it seems likely that most, if not all, are also best practices for a wider range of *graduate* programs.

A. The UT System and Institutional Planning and Organization

Institutions must:

1. Explicitly include doctoral and postdoctoral education as part of an institution's mission and/or vision statement. It must be clear at all levels within the institution and to all external constituencies that the education of doctoral students and postdoctoral scholars is a core component of its mission that deserves appropriate support, recognition, and attention for its own sake. Doctoral and postdoctoral education programs cannot be highly competitive if they are viewed as a secondary mission of the institution or as a mechanism that primarily supports other functions or needs (e.g., to recruit faculty, conduct research, teach undergraduates, etc.).
2. Formally assign responsibility for oversight, along with appropriate authority and resources, of doctoral and postdoctoral education. In most institutions, the dean of the graduate school is designated as the responsible party for doctoral education. There are many models for organization and reporting structures of graduate schools, including interactions of the graduate dean with individual colleges and academic departments as well as the provost and president of the institution. In all cases essential ingredients for success are clearly understood lines of reporting and responsibility, assignment of appropriate authority, and provision of sufficient staff support and resources at each level.

   Each institution that offers postdoctoral education should have a formal training program with designated responsibility, authority, and support for this mission. In some cases this may be the dean of the graduate school, but if so, care should be taken so that postdoctoral education has its own identity and is perceived as having independent value. Regardless of the exact reporting structure, these institutions should have a highly visible, proactive postdoctoral office; the responsible party should be a strong leader, advocate, and spokesperson for all aspects of postdoctoral education; and he/she should be highly visible within the institution.

The need for formal oversight of postdoctoral education at UT System institutions is underscored by the current call for change at the federal level. The National Science Foundation Authorization Act of 2007 (H.R. 1867) before Congress includes a new section on postdoctoral scholar mentoring. The NSF may require institutions that have postdoctoral scholars supported by NSF research funds to have postdoctoral career development programs. If this significant legislation passes, all UT System institutions (all *U.S.* institutions) having NSF research funds would be required to have postdoctoral mentoring programs. Also, it is likely the NIH, USDA, and other federal agencies will follow the lead of NSF.

3. Provide adequate infrastructure to support graduate and postdoctoral education. An essential prerequisite for competitive programs is a faculty publishing high-quality research, and this requires an infrastructure to support the research and scholarly enterprise. This includes space, start-up funds, adequate research office staffing, teaching releases, etc. Furthermore, competitive research programs require the ability to attract high-quality doctoral and postdoctoral students.

   In addition, there is a need to provide support and services to doctoral students and postdoctoral scholars. These include health benefits, counseling, and recreation; housing, childcare, and family support; support for international students; as well as traditional academic services (e.g., registrar, financial aid, etc.). As doctoral students and postdoctoral fellows are also university employees, payroll and benefits, compliance training, and other employee services must also be provided. These services may differ substantially from those of undergraduate students.

4. Include doctoral and postdoctoral education as an integral part of the institution's strategic plans, UT System compacts, presidential work plans, and accountability reporting. Institutional support and planning for doctoral and postdoctoral education must be an ongoing process embedded in institutional strategic plans, performance evaluation, accountability, and continuous quality enhancement functions. This begins with a rigorous intra-institutional review of proposals for new programs or substantive modifications of existing ones and involves regular assessments of ongoing programs. Both should involve rigorous peer analysis by individuals outside the institution.

   Strategic planning should include provision of adequate initial resources (e.g., faculty, facilities, institutional infrastructure, and operating expenses) and realistic plans for stable ongoing support. The UT System and the Texas Higher Education Coordinating Board (THECB) should develop system and statewide strategic plans for doctoral and postdoctoral education, and individual institutional plans should be consistent with these.

5. Explicitly include programs and initiatives to increase local/diverse student and faculty recruitment and retention in strategic plans, UT System compacts, and accountability reporting. Institutional support, initiatives, and planning for increasing the participation of underserved populations must be an ongoing process embedded in institutional strategic plans, performance evaluation, and accountability. Strategic planning should include provision of adequate initial resources and realistic plans for stable, sustainable support of such initiatives. The UT System and the THECB should develop system and statewide recruitment plans for minority faculty, and individual institutional plans should be consistent with these.

   Examples of recruitment strategies for doctoral students, postdoctoral scholars, and faculty:

   - Sending institutional representatives to minority science conferences (e.g., the Society for the Advancement of Chicanos and Native Americans in Sciences, American Indian Science and Engineering Society, etc.)
   - Establishing innovative long-term agreements with minority serving institutes by guaranteeing admissions for qualified candidates
   - Awarding competitive fellowships that are attractive to diverse and underrepresented applicants
   - Establishing target faculty recruitment initiatives.

Examples of retention strategies to guarantee success of the initial investment in recruitment:

- Creating bridge programs to build minority cohorts for successful transition into graduate school.
- Developing additional training initiatives throughout each institution.
- Establishing an office and/or designating individuals responsible for minority student success.

B. Recruitment and Success of Doctoral Students and Postdoctoral Scholars

The rewards far exceed the cost required to recruit and retain the best graduate students and postdoctoral scholars. Without a substantial investment in recruiting activities, in advertising program successes, and in financial support, it is not possible to create or maintain competitive, first-rank programs.

Competitive graduate programs must:

1. Recognize that the key to program success — as measured by the research accomplishments of program faculty and the success of doctoral students and postdoctoral scholars in obtaining employment — is the ability to recruit and retain top people at every level. Top doctoral students and postdoctoral scholars possess the following qualities: intellectual maturity and stamina; intense motivation to learn collaboratively and individually; intellectual integrity; superior intellectual competence including critical thinking, problem solving, communication skills, and analytical ability; the potential for leadership; and the ability to work with a team.
2. Recruit nationally and internationally.
3. Generate important new knowledge that is widely and rapidly acknowledged and used. Then graduate significant numbers of students who become leaders in their fields and communities and who generate income through extramural research funding and fellowships.
4. Maintain a reputation for excellence that increases the ability to attract the best applicants from each year's national applicant pool.
5. Market effectively the quality of programs to the best prospective applicants already committed to doctoral and postdoctoral education and effectively engage capable students who may not have previously considered advanced education. This dual approach is essential to recruit excellent, diverse students in all disciplines and to dramatically increase the numbers of doctoral students and postdoctoral scholars in STEM fields and other strategic areas.
6. Plan for and anticipate changing demographics and job opportunities of the nation and the state of Texas. This requires recruiting students who have the potential to become outstanding researchers and teachers and who will serve as role models for educating Texans of all ethnic, cultural, and economic backgrounds. The best applicants are often attracted to trans-disciplinary and newly emerging areas, and competitive graduate programs must be able to adapt to the changing demands of the communities they serve.
7. Provide competitive stipends, benefits, and stable support for the duration of time needed to complete the doctoral degree and postdoctoral education. There is keen competition among leading universities to attract the best students nationally and internationally. Recruiting these students requires competitive and stable support for the entire education, period. Support is essential to maximize retention, increase graduation rates, and decrease the time required to complete professional education and begin an independent career. Institutional support and philanthropy are essential for stable support of doctoral students and postdoctoral scholars in the current funding climate.
8. Create a highly interactive community of scholars in which doctoral students and postdoctoral fellows are considered to be essential and allowed to participate to the full extent that is appropriate.

9. Have a critical mass of faculty, doctoral students, and postdoctoral scholars committed to discovery research, an environment that values creation of new knowledge, and an organizational framework and atmosphere that foster collegial interactions among all these individuals. This allows faculty members and doctoral students and postdoctoral scholars to understand each others' expectations and commitments, and share responsibility for progressively developing trainees as independent scholars. In successful programs, doctoral students and postdoctoral scholars are treated with dignity and respect appropriate for future professional colleagues, and their contributions are valued and acknowledged. This aids recruitment, retention, and program completion rates and increases research competitiveness of the institution.

C. Faculty and Educational Programs

Institutions and/or Programs must:

1. Have a critical mass of active research faculty who are committed to doctoral and postdoctoral education. There is a sufficient number of productive faculty to establish and maintain research programs consistent with an institution's strategic plans, and the institution provides sufficient support to enable a program to be highly competitive with programs in its institutional peer group[1]. The faculty has adequate skills in research training and mentoring as well as expertise in their discipline to be effective instructors, research advisors, and mentors to doctoral students and postdoctoral scholars. The number of faculty needed for a critical mass in any program is variable but is nevertheless essential to provide the knowledge base and intellectual environment to train Ph.D.s and postdoctoral fellows.
2. Recognize and reward the education of doctoral students and postdoctoral fellows at all levels (e.g., department, school, university) with tenure, promotion, salary, and other appropriate forms of recognition. The institution assigns an appropriate percent work effort and whenever possible the provision of a corresponding funding source for doctoral and postdoctoral education activities including didactic instruction, research supervision, mentoring, and career development activities. The institution assesses the quality as well as the quantity of these contributions. Overall evaluations are weighted to consider the percent work effort devoted to doctoral and postdoctoral education.
3. Assess the enrollment size and quality of doctoral and postdoctoral programs in light of its mission, strategic planning, and financial resources. Program enrollments are reviewed in an ongoing fashion to ensure they remain in line with strategic goals; have a critical mass of faculty, doctoral students, and postdoctoral scholars; have sufficient resources; and remain competitive. Evaluations — involving both internal and external peer review, input from doctoral students and postdoctoral scholars, and career outcomes of alumni — are conducted regularly to insure quality is maintained and that programs remain competitive. Institutions have ongoing review mechanisms in place that would be appropriate for this purpose if rigorously conducted. The UT System might consider ways to support these efforts, e.g., by identifying and arranging for peer reviewers and providing support for reviews.
4. Encourage, facilitate, and support trans-disciplinary programs. The ability to develop trans-disciplinary programs increases an institution's flexibility to respond to changing research priorities and funding patterns. Development and support of trans-disciplinary programs is considered in institutional planning and evaluation processes, the institution provides appropriate resources, and faculty contributions are appropriately recognized and rewarded. Responsibility and authority for oversight of trans-disciplinary doctoral and postdoctoral program is designated.
5. Have an adequate infrastructure and support for doctoral and postdoctoral programs. Institutions and programs have an adequate infrastructure to support the overall doctoral and postdoctoral program(s), including the needs of doctoral students, postdoctoral scholars, and faculty, as well as an adequate infrastructure to support research and research training elements.

6. Have clear guidelines for expectations, milestones, and timelines for completion of the doctoral degree and postdoctoral education and these are effectively communicated to students and faculty. This information is included in catalogs and other information provided to prospective students and the public. All trainees and faculty share a common understanding of the general expectations and timelines. This information is provided to new students and faculty members and periodically reinforced at appropriate times throughout the program(s).

D. Mentoring, Professional Skills and Socialization, and Career Development

Programs must:

1. Provide training in critical thinking, problem solving, communication skills, group dynamics and management, ethics and professional behavior, as well as advanced training in the area of specialization. These are increasingly important elements for career success of alumni, appropriate professional behavior, and effective leadership in all disciplines. Critical thinking and problem solving skills are essential for creativity and innovation which is the basis for competitiveness in the global information economy that is increasing in size and complexity.
2. Help doctoral students, postdoctoral scholars, and faculty become aware of the range of career opportunities for those with doctoral degrees. Graduates will be needed for academic positions to meet the educational needs of the state, but many will enter non-academic positions in government and the private sector. Awareness of the full range of opportunities is important to increase the numbers of students seeking advanced training in STEM and other priority areas and to guide their academic preparation. Faculty need to be aware of careers their graduates will enter to develop appropriate student learning outcomes and desired competencies.
3. Provide curricula, career development opportunities, and other training activities to prepare graduates for a wide range of positions in academia, government, and private business. Faculty should provide training to achieve desired student learning outcomes and competencies that prepare them for a wide range of careers, including both academic and non-academic positions, they will assume in the future.
4. Understand, along with individual faculty and the institution as a whole, the importance of mentoring and accept it as a shared responsibility. Mentoring and career development are seen at all levels as shared responsibilities that are important components of doctoral and postdoctoral education. Institutions should have assistance available for faculty and leaders to enhance their mentoring and advising skills. The mentoring abilities of the faculty should be assessed in faculty evaluations, and a concrete merit system should reward faculty for good mentoring.
5. Support the transition of doctoral students and postdoctoral trainees to the next stage of their careers and throughout their professional lives. Programs and faculty advisors support their trainees as they pursue advanced education and the independent professional careers of their choice.
6. Provide an evaluation mechanism to monitor and enhance continued development of faculty in all areas including mentoring, researching, and teaching. Faculty members should be afforded every opportunity to advance their knowledge base in areas critical to their respective fields. Evaluations are a key component of this continuing development, but protected time for faculty to engage in intellectual advancement is also vital.
7. Foster an intellectual environment that stimulates independent thinking while maintaining an emphasis on the welfare of students and postdoctoral fellows. Though hard to quantify, the most productive and inspired doctoral students and postdoctoral fellows are those that are part of a supportive and engaging environment that values their contributions. Many factors impinge upon a successful intellectual environment, but an emphasis on quality students and postdoctoral fellows rather than quantity, while increasing the diversity of the same, is a focal point. In addition, the institution provides conduits for discussion between graduate students, postdoctoral fellows, faculty, and administration.

APPENDIX 2

Impediments and Critical Areas for Improvement

Based on broad input from the UT System institutions, along with consideration of best practices, state and national trends, and comparisons with other universities, the Task Force identified a number of impediments to enhancing doctoral and postdoctoral education, key areas for improvements, and other related concerns. Not every impediment will exist at every institution, but the Task Force strongly recommends that presidents and other leaders carefully consider whether these impediments may exist on their campuses and take corrective action if necessary.

A. UT System and Institutional Planning and Organization

1. The general public, and in some cases, the full institutional community do not recognize doctoral and postdoctoral education as a core mission of the institution nor understand its value to the institution and society. These programs are not always visible in descriptions of institutional missions.
2. The UT System and THECB do not have adequate strategic plans for doctoral and postdoctoral education. Lack of plans makes planning; operation; funding; and assessment of workforce, institutional, System, and state needs problematic and does not help institutions to plan recruiting and admissions.
3. Doctoral and postdoctoral education is not always adequately addressed in strategic plans, compacts, presidential work plans, and accountability reports. The interests and needs of these programs may be overshadowed by undergraduate programs on academic campuses and by clinical issues on health-related campuses. Evaluation of presidents and senior administrators may not explicitly address achievements in doctoral and postdoctoral education or include meaningful input from graduate faculty, doctoral students, and postdoctoral scholars.
4. Institutional strategic plans do not realistically address funding for doctoral and postdoctoral education, including initial start-up costs and sources of stable ongoing support. Plans for new programs do not always adequately address the cost to recruit and retain competitive faculty, the infrastructure needs for research and graduate education, or the need for stable support of doctoral student stipends. Plans for continued operation of existing programs do not always adequately address the stability of support necessary to maintain and improve quality and competitiveness.
5. In some cases, graduate schools and deans are seen as 'subservient' to other offices and interests, and may not have sufficient resources and stature within an institution's organizational structure. Institutions may not have a senior administrative leader and/or office for postdoctoral education with sufficient responsibility, authority, and resources to provide needed services.
6. Student stipends, benefits, and incentives are variable among and within UT System institutions and are inadequate in some cases. There is a special need to provide adequate health benefits, comparable to those received by faculty and staff, to all full-time students and postdoctoral scholars who receive a stipend or salary.
7. Initiatives and programs to increase diversity and inclusiveness of historically underserved populations (both faculty and trainees) are often under funded, inconsistently implemented, not well coordinated at the System and institutional levels, and are not linked to K-16 programs.

B. Recruitment and Success of Doctoral Students and Postdoctoral Scholars

1. The high quality of doctoral and postdoctoral education programs at UT System institutions is not always universally well known in the academic, research, and business communities.
2. There is not a central mechanism to readily identify undergraduates at UT System institutions and other Texas schools who are considering doctoral study, or for such undergraduates to easily obtain information about graduate programs at all UT System institutions.

3. Prospective graduate students and postdoctoral fellows from other states and countries may not appreciate that the cost of living in Texas is far less than other parts of the country, and this perception may make stipends and benefits in the state appear less attractive than they are.
4. Student stipends and benefits are not competitive at all UT System institutions. Low stipends are more common at academic rather than health institutions. The lack of health benefits comparable to those of faculty and staff is highly problematic at some institutions.
5. Even in cases where annual stipends are competitive, UT System institutions do not generally "guarantee" students stable support for the full time to complete the doctoral degree; this is becoming more problematic as other top-tier institutions are increasingly offering such long-term support.
6. As competition for extramural research funding becomes more intense, the provision of stipends for pre-candidacy doctoral students from research grants is expected to become problematic. Using grant funds to support students primarily involved in didactic coursework and preparation for candidacy examinations may create a potential short-term conflict between the educational needs of the student and research productivity needed for grant renewals.
7. Formula funding does not fully fund the cost of doctoral education, including stipends and benefits for pre-candidacy students, and trainee support from government sources has decreased in real dollars. This prevents programs at UT System institutions from becoming more competitive overall without additional state or institutional support.
8. There is a special need for fellowships and benefits to support doctoral students in the arts and humanities while they write their dissertations. After they have completed their own coursework and served as teaching or research assistants, they require a year or more to focus intensively on the preparation and writing of their dissertations, and there is a critical lack of funding for this purpose.
9. Faculty members, doctoral students, and postdoctoral fellows do not always have a clear sense of expectations and commitments from each other, from the program, or from the institution. This decreases student success rates, increases the time to complete the doctoral degree or postdoctoral study, and increases overall costs.
10. There is a shortage of students entering doctoral programs at UT System institutions in STEM fields and other critical areas to support strategic goals. Given the demographics of the state, this problem cannot be solved without increased diversity in graduate and postdoctoral programs and without major changes at the K-16 level.
11. There is a lack of financial, academic, and social support systems for capable but educationally disadvantaged students admitted to graduate school who are not sufficiently prepared for rigorous coursework and the conduct of independent research. Using the traditional method of supporting such students as research assistants funded by a faculty member's research grant is unrealistic and ultimately self-defeating; other mechanisms must be identified to support these students.
12. Graduate faculties do not always appreciate that traditional admissions criteria, especially standardized test scores, may not be reliable predictors of success as a graduate student and independent research scholar. In other cases, faculty may recognize this point but lack other reliable indicators to evaluate applicants from diverse backgrounds and/or with variable K-16 preparation.
13. Some programs may not have a critical mass of students, postdoctoral fellows, and faculty, and/or other essential resources (offices, meeting spaces, laboratories, etc.) to develop and maintain the interactive community of scholars necessary for creativity, innovation, and competitive programs.
14. Faculty members may not have the teaching, communications, lab management, and interpersonal skills to effectively operate programs in the contemporary atmosphere of increased diversity; varied backgrounds, interests, and aspirations; and changes in the number and type of career opportunities available for Ph.D. graduates. This lack of mentoring and management skills is counterproductive to creating a sense of community in which trainees feel included and valued.

C. Faculty and Educational Programs

1. Programs may not have a critical mass of research faculty capable of attracting enough students, obtaining sufficient funding, and being productive enough to operate a competitive program. Resources may be insufficient to recruit and retain sufficient numbers of competitive faculty members and/or to enable them to devote the required effort to doctoral and postdoctoral education for programs to be competitive.
2. Faculty may not feel they are adequately rewarded for contributions to doctoral and postdoctoral teaching, especially the oversight of dissertation and postdoctoral research. Whether real or perceived, this is highly problematic.
3. Adequate mechanisms may not always be in place to document and assess faculty members' contributions to doctoral and postdoctoral education. Assessments may not adequately include trainees and peers.
4. As noted previously, but also applicable here, faculty members, doctoral students, and postdoctoral fellows do not always have a clear sense of what each expects from the other, of the commitments each makes explicitly or implicitly to each other, or what the institutional/program expectations and commitments are for doctoral and postdoctoral education. There may be additional concerns at health institutions where some graduate faculty members may hold professional degrees and do not have extensive prior experience with academic doctoral education.
5. Faculty members may not have the teaching, advising, mentoring, communications, lab management, and interpersonal skills to effectively operate programs in the contemporary atmosphere of increased diversity of backgrounds, interests, and career aspirations; very large laboratories or research groups; multiple program affiliations and trans-disciplinary research; and teaching efforts.
6. A lack of faculty skills impacts the effectiveness of research training and didactic teaching and as noted in the previous section is also counterproductive to creating a sense of community in which trainees feel included and valued. Adequate mechanisms and/or sufficient time are not available to help faculty acquire needed skills.
7. New program proposals and ongoing reviews of existing ones can be insufficiently rigorous at institutional or System levels to ensure that competitive programs will develop and be maintained. Unrealistic assurances that "no new resources" are needed to initiate and/or to maintain quality programs are often made, along with assurances that other institutional programs such as undergraduate or professional education will not be adversely affected by diverting resources.
8. Institutions and faculty may have unrealistic expectations for developing doctoral and postdoctoral programs that are not aligned with their missions and resources or with institutional and System strategic plans. Proposed programs may overestimate their ability to attract productive research faculty and competitive doctoral and postdoctoral trainees.
9. Institutions do not provide adequate resources to stimulate creation of trans-disciplinary programs or mechanisms to adequately reward faculty participation (e.g., co-PI assignments on grants, credit for non-department teaching, etc.).
10. Some faculty members and department leaders are resistant to programmatic reorganizations that involve formation of trans-disciplinary programs and/or may lack the experience, knowledge, skills, and/or resources to develop such programs.
11. There is a critical lack of women and underrepresented minorities at senior faculty and leadership levels.
12. Institutions do not have mechanisms to recognize excellence in doctoral and postdoctoral education comparable to those for undergraduate and professional teaching and research achievements.
13. UT System and THECB do not have strategic plans that can assist programs to plan appropriate enrollments, ensure adequate resources are available, and guide institutional decisions to ensure that institutional, state, and national needs are met.

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report (cont.)

D. Mentoring, Professional Socialization and Skills, and Career Development

1. Education does not always prepare students for critical thinking and problem solving necessary for creativity and innovation.
2. The career options for Ph.D.s are expanding dramatically, but the education provided by some programs is too narrowly focused and does not provide sufficient breadth for the range of careers available to trainees. Many faculty have worked exclusively in academia and do not have the first-hand experience to provide appropriate advice or mentoring about non-academic careers or to teach the skills required; some faculty members may not support, or may actually denigrate, trainees' desires to pursue non-academic careers.
3. Programs may not provide sufficient training in communications, organizational, and management skills or the breadth of knowledge needed to effectively participate in trans-disciplinary work or to function effectively in large, diverse teams.
4. Some faculty members do not understand the importance of mentoring and/or do not have the skills to effectively mentor trainees; institutions may not provide effective training for faculty who wish to improve their mentoring skills and/or encourage all faculty members to have such skills.
5. Mentoring and career development require effort for which faculty members do not have adequate time or may not feel adequately rewarded.
6. There may be real or perceived conflicts of interest between the trainees' needs for career development and mentoring and the advisors' needs for research productivity when trainees are funded from individual research grants.
7. Programs do not effectively survey alumni and their employers to assess how effectively education prepares graduates for their careers.
8. Institutions do not have the resources, or do not feel it is their responsibility, to help trainees assess their career interests and options and develop career plans.
9. Some faculty discourage trainees from taking the time to participate in available career development activities unrelated to their own research.
10. All trainees may not have access or training to utilize the tools that will help them identify, prepare for, and apply for independent positions. There is no coordinated mechanism for potential employers to identify and recruit UT System trainees for available positions.

APPENDIX 3
Cost Estimates for Implementation of Recommendations

Undergraduate Summer Research Programs.

All UT institutions with research-based Ph.D. programs would be eligible to apply. The goal of the program is to provide an experience for undergraduates that will familiarize them with innovative research, provide basic research skills and training, and encourage them to consider subsequent Ph.D. study.

- UT System determines the number of positions available each year by discipline and solicits applications.
- Programs are 10 weeks and involve extensive interactions with doctoral and postdoctoral students.
- Applications may be submitted by individual academic departments or for interdepartmental, trans-disciplinary training.
- Applications must describe plans to recruit outstanding, diverse participants and conduct follow-up evaluations of attendees including enrollment in doctoral programs.
- Programs must provide a hands-on research experience; students should not merely observe research.
- Programs must provide training in communications skills and professional ethics and behavior and exposure to a broad range of career options.
- Funds could be used for student stipends, housing, and travel allowances.

Cost. We recommend that 500 positions be provided each year at a cost of $6,500 each. Awards would be for three years (contingent upon satisfactory progress) beginning with 160-170 positions in the inaugural year, and increasing by like amounts for each of the following two years. Awards would be eligible for competitive renewal every three years. The first-year cost would be approximately $1.1 million, and, after three years, the total annual cost would be $3.25 million. This is a very modest per student cost to encourage and support the most competitive college students from Texas and other states to pursue doctoral studies within the UT System.

Regents' Doctoral Fellowships

Each year the UT System would determine the number of fellowships to be made available in broad areas of doctoral education (e.g., biomedical sciences, physics, math, engineering; social sciences, arts, humanities, etc.) and issue a corresponding call for applications.

- Students would apply directly to UT System institutions.
- UT System institutions would submit the names of the most competitive students they admit to a review committee(s) appointed by the UT System that would evaluate the applications prior to the annual deadline for accepting offers of graduate school admission.
- Fellowships would provide $30,000 which would be used exclusively for doctoral student stipends. Institutions would pay costs of tuition, fees, and benefits. This stipend level would make these Regents' Fellowships highly competitive on a national level and the recognition of a "named award" would increase their attractiveness.
- Each award would be made for a total of four years contingent upon satisfactory progress and good academic standing.

Cost. We recommend that 200 four-year fellowships be awarded in the first year of the program with an additional 200 awards in years two, three, and four up to a total of 800 awards each year. Thereafter, 200 new awards would be made each year. The first-year cost of the program would be $6 million and would increase in four years to $24 million per year. While this cost is substantial it will insure that UT schools can compete successfully with the most outstanding universities to attract students from Texas, the US, and around the world; this in turn will have enormous dividends in increasing competitiveness for faculty recruitment and research productivity.

Postdoctoral Fellowship Support

The National Institutes of Health (NIH) level of support for a beginning postdoctoral scholar is $36,000 per year, and this is generally at or above national standards for many other fields including natural sciences and mathematics, social sciences, arts, and humanities. This basal stipend would be provided by the postdoctoral mentor or institution, and this UT System program would provide *additional* funds to give a competitive recruiting advantage to our institutions vs. other leading national and international universities.

- Each year the UT System would determine and publicize the number of awards to be made in broad areas of postdoctoral study.
- Mentors negotiating with prospective postdoctoral students would submit their names and credentials to a UT System committee that would review applications three to four times per year.
- Each award would provide a salary augmentation of $24,000 per year, for a total stipend of $60,000, which would be highly competitive on both national and international levels. Awards would be for two-year periods contingent upon performance.
- An additional amount of $12,000 would be provided for moving expenses and other reasonable relocation costs/personal or family expenses the first year, and to support professional development (e.g., attendance at professional meeting, research related expenses, computer and software, etc.) in the second year.

Cost. We recommend that 100 two-year awards be made the first year and a like number the second year and each subsequent year. First-year costs would be $3.6 million and $7.2 million each year thereafter. The sustained ability to recruit the most outstanding postdoctoral scholars, coupled with programs for undergraduates and doctoral students (*vide supra*) would have an enormous synergistic impact on UT System schools and elevate them to the most competitive level in the world for doctoral and postdoctoral education.

Centers of Excellence for Innovative, Trans-disciplinary Doctoral and Postdoctoral Training

To support the goal of increasing trans-disciplinary doctoral and postdoctoral education, we recommend the establishment of a program to support training in areas identified as high priority in the UT System strategic plan. For example, in the 2006-2015 plan these areas were cancer research, infectious diseases, and diabetes; drug diagnostics and development; security issues; energy; national labs, e.g., Sandia; information technology; and nanotechnology and nanoelectronics.

- Each year the UT System would announce high-priority areas and invite applications for innovative, trans-disciplinary doctoral and postdoctoral education programs; funding could also be requested for undergraduate summer research support to encourage undergraduates to enter doctoral programs in priority areas.
- Funds could be used for stipends, tuition, and benefits; trainee travel to professional meetings; other appropriate trainee-related expenses; and symposia or other mechanisms to raise awareness of the area in question.
- Initial awards would be for five years pending satisfactory performance, with a one-time option to submit a competitive continuation for no more than five additional years (i.e., a maximum of 10 years of support total).
- The intention of the program is the initial support for development and operation of doctoral and postdoctoral education programs in specific strategic areas that would become competitive for independent extramural support from non-university sources.

Cost. We recommend that two five-year awards ($ 0.5 million each) be made during the first year of the program for an initial annual cost of $1 million. Thereafter, two additional awards are recommended in years two through five, reaching a total of 10 awards that would be the level in all subsequent years. If each award was $ 0.5 million, this would represent a total annual cost of $ 5 million. These awards would be a cost effective ways to immediately elevate research competitiveness in the fields of greatest strategic importance to UT and to insure that our institutions educate the future leaders who will enable our universities to remain preeminent in the selected areas.

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report (cont.)

APPENDIX 4
Graduate and Postdoctoral Education in Texas and the UT System - Background, Current Programs, and Benchmarks

Background

Doctoral education in Texas and at UT System institutions has historically lagged behind that of other states and universities. For example, from 1920 – 1999, Texas ranked 6th in total Ph.D. production and produced less than one-half the Ph.D.s of New York and California and also trailed Illinois, Massachusetts, and Pennsylvania. During this time, The University of Texas at Austin ranked 12th in the nation in the number of doctorates awarded and 13th in awarding baccalaureate degrees to students who went on to receive a Ph.D.[11] As a result, Texas institutions, especially those that are younger than UT Austin, lag far behind those of other states in length of existence and total numbers of graduates which are key features in determining the national and international reputations that are critical to recruitment of faculty, graduate students, and postdoctoral fellows, as well as the potential for alumni support.

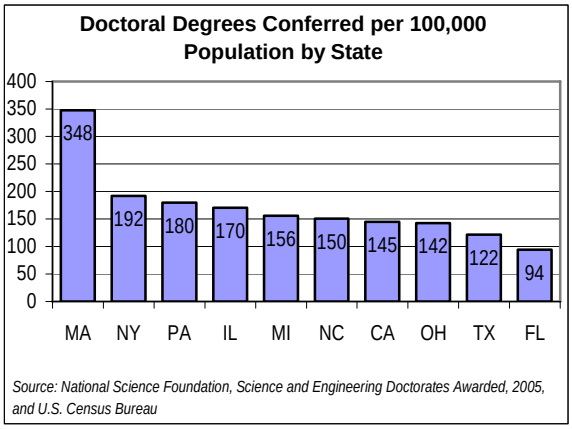
The Current Situation: Size and Scope of UT System Doctoral Programs

UT System institutions offer a large number of doctoral and postdoctoral programs in a wide range of fields. In 2005-06, UT System academic institutions enrolled 7,740 doctoral students in 187 doctoral programs on five campuses (UTA, UT Austin, UTD, UTEP, and UTSA). Five UT System health institutions (UTSWMC, UTMB, UTHSCH, UTMDA, and UTHSCSA) enrolled 1,901 students in large Ph.D. programs in the biomedical sciences that offer research specialization in a wide variety of areas. Collectively, these institutions awarded 1,231 doctoral degrees in 2004-05, which was over half the total awarded by all public universities and health-related institutions in the state. Data from the National Science Foundation indicates that these 10 institutions also have approximately 2,000 postdoctoral research scholars, although this figure is more difficult to interpret since the definition, classification, and tracking of postdoctoral scholars varies considerably among institutions and programs. Taken together, these figures indicate that UT System institutions devote a large amount of their efforts and resources to doctoral and postdoctoral education.

Texas is currently ranked 3rd in the nation in production of total Ph.D.s (behind California and New York), but Texas institutions awarded less than half the number of Ph.D.s as California in science and engineering fields. (NSF, June 2006) In 2005, Texas was 3rd overall in the total number of doctorates awarded, but the state continues to trail California, New York, and Massachusetts in awarding doctorates in the physical sciences; trails California in engineering doctorates by two-to-one (986 to 485); and is barely ahead of Massachusetts, Pennsylvania, and Illinois in science and engineering degrees awarded despite having a much larger college-aged population.[12] Thus, while the state and UT System institutions have made recent strides, we remain behind in several key areas.

- Texas ranks 30th of the 50 states in science and engineering Ph.D.s per 1,000 workers.[13]
- Texas ranks 8th out of the 10 most populous states in the proportion of science and engineering doctorates in the workforce.[14]
- Texas ranks 26th in R&D expenditures per capita. (14)
- In 2005, Texas was below the national average for Ph.D.s awarded per capita and ranked 9th out of the 10 most populous states in number of Ph.D.s awarded per 100,000 population.[15]

Together, all these indicators show that Texas significantly trails other key states with which we must compete in a number of critical parameters.



Source: National Science Foundation, Science and Engineering Doctorates Awarded, 2005, and U.S. Census Bureau

Diversity Must be Markedly Increased

Past and projected demographic shifts in Texas have had — and will continue to pose — significant challenges for doctoral and postdoctoral education in the state.

- In 2001, international students received roughly one-fourth of all doctorates awarded in Texas, yet changing regulations and restrictions since then have made graduate education in the U.S. less attractive to these students than that in Australia, Europe, and other locations. (9)
- African Americans and Hispanics receiving Ph.D.s in the state are highly underrepresented relative to their presence in the overall population of Texas, 5 percent vs. 11 percent and 7 percent vs. 34 percent respectively in 2001. (9)
- Similarly, as illustrated in the table below, African Americans and Hispanics are highly underrepresented relative to their presence in the overall population of Texas in the number of Ph.D.s awarded by all UT System institutions in 2004-2006.

	Doctoral Degrees Awarded by UT (All Institutions, 2004-06)	% of Total Doctoral Degrees Awarded by UT to Domestic Students	Percent in Texas population
White	1,673	75%	46%
African American	113	5%	12%
Hispanic	229	10%	38%
Asian	227	10%	
TOTAL Domestic	2,237		
Other" (assumed to be largely international)	1,424		
TOTAL Ph.D.s Awarded	3,361		
Sources: Texas Higher Education Coordinating Board and Texas State Data Center			

Given that the population of underrepresented minorities is increasing but the fraction of these ethnic groups who attend college and graduate school is less than that of Whites, current projections indicate that the absolute number of Ph.D.s awarded by UT System institutions and within the state will remain essentially constant within the next decade[16], and that by 2040 the proportion of the Texas labor force with a graduate or professional degrees will actually *decrease* by 17 percent.[17] This data underscores the critical need to increase the diversity of doctoral students and postdoctoral scholars from Texas and the U.S. in the UT System and to make our institutions more attractive to outstanding international applicants.

It should be noted that the University of Texas System has a special responsibility in meeting these challenges in Texas due to the nature of doctoral education in the state. In Texas, 85 percent of doctoral degrees are awarded by public institutions compared to the national average of 63 percent and that of the key states with which we must compete, e.g., California (48%), Pennsylvania (55%), Illinois (42%), and Florida (58%). In fact, of the 10 most populous states, only Michigan public universities provide as high a fraction of Ph.D.s awarded in the state as in Texas[9]. Consequently, unlike many other states, Texas cannot rely on private institutions to produce enough graduates to meet state needs — this falls largely to UT System institutions. It is a leadership role the System must embrace if the state is to prosper.

Health Benefits Must be Provided to Enhance Recruitment and Student Success

Every one of our discussions and focus groups with faculty members, administrative leaders, doctoral students, and postdoctoral scholars raised the issue of health benefits, perhaps the single most widely raised concern. There was unanimous and forceful agreement by all parties that health benefits must be provided to be competitive for recruiting doctoral students and postdoctoral scholars. The actions of the 78th Legislature, which imposed a 90-day waiting period and substantially diminished state funding for research and teaching assistantships, led to the loss or substantially reduced benefits for many students and created

a major financial burden for institutions that sought other fund sources to restore benefits. There was also unanimous agreement that providing health benefits comparable to those of faculty and staff would make UT System institutions highly competitive for recruiting doctoral students and postdoctoral scholars and is critical to increase diversity. In further support of this recommendation

- The UT System Student Advisory Council independently recommended that adequate health care benefits be provided for graduate students
- Best practices for postdoctoral programs listed by the National Academy of Sciences and other leading groups include providing adequate health benefits[4].
- Review of doctoral program websites at leading institutions with which UT System competes to recruit doctoral students and postdoctoral scholars indicate that all those examined provide health benefits; examples include Michigan, Wisconsin, Illinois, Harvard, Yale, Stanford, Duke, UC-San Francisco, UC-San Diego, Penn State, Washington University, Johns Hopkins, Baylor College of Medicine, Vanderbilt, and the Mayo Medical School.
- Provision of adequate health benefits for doctoral students and postdoctoral scholars and their dependents, as well as child care facilities, will enhance student success, and in many cases are absolutely essential to enable these students and scholars, who are older and more likely to have families than undergraduates, to participate in these advanced education programs.

Stipends are not Competitive at All UT System Institutions

Meaningful in-depth, comprehensive comparisons of doctoral student stipends are extremely difficult to obtain and interpret for a number of reasons.

- Stipends vary widely by disciplines, institutions, and geographic regions
- There are no uniformly accepted reporting standards or formats for stipends and benefits (e.g., 9 month vs. 12 month appointments)
- The stipends of doctoral students in the same discipline and institution vary substantial depending upon the nature of the support mechanism (e.g., teaching assistantship, research assistantship, competitive fellowship, individual award from an extramural foundation or government agency, training grant appointments, etc.)

School - Program	Stipend 2006-2007
Harvard Neurosciences	$28,008
Yale Biological and Biomedical Sciences	$28,000
U Penn Biomedical Graduate Studies	$26,520
UCSD Program in Biomedical Sciences	$26,000
UCSF Biomedical Sciences Program	$26,000
Duke Biochemistry	$25,000
UNC Biomedical Sciences	$23,000
Vanderbilt Interdisciplinary Graduate Program	$24,000
Mayo Graduate School	$23,600
Washington University in St. Louis Biology and Biomedical Sciences	$26,000
Baylor College of Medicine GSBS	$23,000
University of Michigan Program in Biomedical Sciences	$23,500
Stanford University Bioscience	$29,000
Johns Hopkins	$26,200
UT System Institutions	
UT Southwestern Graduate School of Biomedical Sciences	$23,000
UT HSC-Houston Graduate School of Biomedical Sciences	$23,000
UT Medical Branch Graduate School of Biomedical Sciences	$23,000
UT HSC-San Antonio Graduate School of Biomedical Sciences	$21,500
National Institutes of Health	$20,772
National Science Foundation	$22,500

Meaningful analysis of stipends for postdoctoral scholars is even more problematic. Some of the above points may apply, but in addition the length of experience of postdoctoral fellows since award of the Ph.D. varies substantially (typically from 0-4 years), and arrangements are almost always made between scholars and individual mentors rather than between individuals and academic departments as for doctoral students. Even in cases where institutions have recommendations, these are usually intended to serve as guidelines and in most cases specify either a minimum level and/or a very broad range.

The one area in which the Task Force has some degree of confidence in presenting actual data is for the biomedical science Ph.D. programs at UT System health-related institutions, since there are national

benchmarks (both NIH and NSF) for doctoral student stipends, there is a greater degree of consistency in reporting stipends for biomedical programs at different institutions, and substantial similarity in many cases to stipends in different sub-disciplines of the biomedical sciences (e.g., biochemistry, genetics, pharmacology, etc.). Thus we provide limited factual data in this area and simply relate our impressions for other areas from personal experiences and input from our focus group discussions with faculty, doctoral students, postdoctoral scholars, and administrative leaders.

At present the standard NIH stipends for doctoral students are $20,772 per year and NSF stipends are $22,500. These are the levels awarded for individual fellowships or appointment to training grants awarded by these agencies to institutions. The accompanying table indicates the stipends for doctoral students enrolled in biomedical sciences programs at UT System health-related institutions and also for a number of institutions with whom we compete. The UT System health-related institutions are above the NIH and NSF stipend levels and generally within the competitive range, albeit in the lower half and substantially below the levels of $28-29,000 at some of the most prominent East and West Coast institutions that offer the greatest competition for doctoral student recruitment. The Regent's fellowships of $30,000 recommended by the Task Force would provide stipends for selected areas in the most competitive range.

It is much more difficult to generalize the situation on academic campuses, but based upon the experience of the Task Force members and interviews with students, postdoctoral scholars, faculty, and administrative leaders several general points emerged about stipends for doctoral students.

- There is a wide disparity in stipends at the academic campuses, both between campuses and between different disciplines on the same campus
- Some programs at the larger campuses, especially in the sciences and engineering, are able to provide stipends within the competitive range, but not at the very top end or most competitive levels for their disciplines
- Many programs in the arts, humanities, and social sciences are not able offer competitive stipends for doctoral students. There is a special need for a final year of support for students in these areas to concentrate on completing the writing of their dissertations.
- Many of the newer doctoral programs at UT System institutions do not offer competitive stipends, this is especially problematic in cases where students must pay all or a portion of their tuition and health benefits

While these impressions are somewhat anecdotal and there may be exceptions, the general sense of the Task Force is that stipends at the academic campuses are not competitive in many disciplines, especially non-scientific ones, and that this limits the ability of these programs to recruit outstanding, diverse students.

In addition to the amount of stipends provided, the source of stipend funds is important to consider. For example, "fellowships" that do not carry any work obligations (e.g., teaching undergraduate classes) are seen as more desirable and prestigious than assistantships that carry some type of work obligation. The table below indicates the type and source of support for full time graduate students in science, engineering, and health at a number of leading public universities and the mean for the ten UT System institutions with Ph.D. programs.

9. U. T. System: Acceptance and approval of the final report from the Task Force on Doctoral Education and the Postdoctoral Experience and authorization to implement the recommendations held within the report (cont.)

Full-time graduate students in science, engineering, and health, by type and primary source of support: Fall 2004

Type and primary source of support	UT System	UC Berkeley	UCLA	UCSD	U Illinois	U Michigan	UWI-Madison	U Minnesota	Penn State	Ga Tech
All types and sources of support	10,105	5785	5130	2673	5118	5264	4703	5593	3922	4415
Fellowship and traineeship	855	1350	1257	670	497	1430	610	613	293	266
Federal support	447	503	474	336	84	440	402	242	145	111
Institutional support	316	837	742	233	405	912	106	247	126	24
Other nonfederal support	92	10	41	101	8	78	102	124	22	131
Research assistantship	3,158	1871	1182	1089	2202	1477	2201	1904	2044	2265
Federal support	1,333	1151	825	375	1403	874	1490	1010	1059	1050
Institutional support	1,107	714	248	489	711	490	356	535	685	699
Other nonfederal support	718	6	109	225	88	113	355	359	300	516
Teaching assistantship	2,256	1070	893	570	1228	878	803	1391	1006	687
Federal support	89	1	1	0	6	7	1	6	27	0
Institutional support	2,134	1069	892	570	1221	870	792	1370	967	650
Other nonfederal support	33	0	0	0	1	1	10	15	12	37
Other types of support	3,836	1494	1798	344	1191	1479	1089	1685	579	1197
Federal support	67	25	51	35	14	21	145	25	17	35
Institutional support	245	64	10	27	670	170	115	619	67	3
Other nonfederal support	190	158	20	28	2	65	71	109	45	50
Self support	3,334	1247	1717	254	505	1223	758	932	450	1109
Support type										
% Fellowships	8.5%	23.3%	24.5%	25.1%	9.7%	27.2%	13.0%	11.0%	7.5%	6.0%
% Research assistantship	31.3%	32.3%	23.0%	40.7%	43.0%	28.1%	46.8%	34.0%	52.1%	51.3%
% Teaching assistantship	22.3%	18.5%	17.4%	21.3%	24.0%	16.7%	17.1%	24.9%	25.7%	15.6%
% Other (excl. self)	5.0%	4.3%	1.6%	3.4%	13.4%	4.9%	7.0%	13.5%	3.3%	2.0%
Support source										
% Federal support	19.2%	29.0%	26.3%	27.9%	29.4%	25.5%	43.3%	22.9%	31.8%	27.1%
% Institution support	37.6%	46.4%	36.9%	49.3%	58.8%	46.4%	29.1%	49.5%	47.0%	31.2%
% Other nonfederal support	10.2%	3.0%	3.3%	13.2%	1.9%	4.9%	11.4%	10.9%	9.7%	16.6%
% Self support	33.0%	21.6%	33.5%	9.5%	9.9%	23.2%	16.1%	16.7%	11.5%	25.1%

Source: National Science Foundation/Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering

NOTE: These data must be interpreted with some caution because they represent all graduate students i.e., both master's and doctoral students while most other data in this appendix and report refers solely to doctoral students.

While there is wide variation among UT System institutions themselves, several important features emerge for the UT System take as a whole.

- The proportion of students at UT System institutions that are supported by fellowships (8.5%) is lower than at most of the other institutions listed.
- With only 19 percent of support coming from federal sources, on average, students at UT System institutions are less competitive than the other public institutions listed.
- Most of the other public institutions listed above offer more institutional support to graduate students than UT System institutions and require significantly less self-support from the student.

Overall this data indicates that the availability of additional fellowship and institutional support would significantly increase the competitiveness of UT System institutions for recruiting graduate students.

The Quality of Doctoral and Postdoctoral Education at UT System Institutions is not Appropriately Recognized

The Task Force repeatedly and consistently heard in discussions with faculty, doctoral students, postdoctoral scholars, and administrative leaders that the quality of UT System's doctoral and postdoctoral educational programs is not recognized at many undergraduate schools in the United States and other countries. This is a serious impediment to recruiting efforts that must be addressed by both the System and institutions for UT System's recruitment efforts to become more competitive.

In addition to comments from UT System institutions, there is some objective data to support this conclusion if one examines research grants and training grants in the area of biomedical sciences, which, as noted above, is an area where appropriate comparisons are relatively easier to make.

The table below provides the number and amount of research and training grants from NIH at a sampling of highly recognized universities and UT System health institutions. The ratio of training to research support is also provided, both by number and dollar amount.

Ratio of Training Grants to Research Grants at UT System Health Institutions

Institution	# Research Grants	# Training Grants	Ratio (as %)	$ Research Grants	$ Training Grants	Ratio (as %)
Harvard U	521	50	10%	$290,257,469	$20,578,321	7%
U Of Wisconsin Madison	564	43	8%	$225,606,046	$15,007,393	7%
U Of Chicago	392	27	7%	$175,246,011	$11,479,361	7%
Yale U	734	56	8%	$308,440,381	$20,052,204	7%
U Of California Berkeley	258	18	7%	$88,094,409	$6,145,291	7%
Stanford U	634	38	6%	$282,133,753	$17,474,508	6%
U Of Michigan	848	70	8%	$353,344,257	$21,476,156	6%
U Of Washington	849	63	7%	$408,269,801	$23,708,304	6%
Vanderbilt U	586	44	8%	$245,942,777	$14,270,403	6%
U Of North Carolina Chapel Hill	646	53	8%	$272,779,490	$14,986,608	5%
Johns Hopkins U	1,113	74	7%	$537,026,809	$28,654,743	5%
U Of Pennsylvania	1,000	71	7%	$433,269,557	$22,658,277	5%
Cornell U	434	28	6%	$170,845,920	$8,819,998	5%
U Of California San Diego	598	41	7%	$286,571,411	$14,452,160	5%
Massachusetts Institute Of Technology	217	13	6%	$162,233,177	$7,675,108	5%
Columbia U	670	45	7%	$307,420,522	$14,450,603	5%
U Of Minnesota	510	32	6%	$206,948,323	$9,208,627	4%
U Of California San Francisco	843	50	6%	$392,623,899	$17,236,067	4%
U Of Colorado Denver/Hsc Aurora	402	29	7%	$170,483,401	$6,928,140	4%
U Of California Los Angeles	782	49	6%	$360,017,579	$14,474,172	4%
Washington U	773	44	6%	$370,202,512	$14,613,581	4%
Baylor College Of Medicine	504	36	7%	$233,419,757	$9,016,045	4%
Duke U	685	40	6%	$351,399,865	$13,440,714	4%
Oregon Health & Science U	431	23	5%	$162,881,851	$5,935,780	4%
Case Western Reserve U	614	28	5%	$240,754,055	$8,427,194	4%
U Of Alabama At Birmingham	460	27	6%	$195,874,696	$6,013,011	3%
UT System Health Institutions						
UT Sw Med Ctr Dallas	374	18	5%	$159,122,228	$5,249,456	3%
UT Hlth Sci Ctr Houston	174	10	6%	$77,978,291	$2,199,451	3%
UT Hlth Sci Ctr San Ant	212	7	3%	$75,558,046	$2,025,288	3%
UT M D Anderson Can Ctr	314	8	3%	$147,074,507	$2,434,932	2%
UT Medical Br Galveston	225	9	4%	$98,883,348	$1,392,311	1%

Source: National Institutes of Health

Research grants from NIH provide an objective measure of the quality of faculty research based upon peer assessment. In contrast, training grants from the NIH are made to support the education of doctoral students and postdoctoral scholars in biomedical science and are assessed primarily on the basis of two criteria: the quality of the faculty research *plus* the quality and quantity of doctoral students and postdoctoral scholars that have previously applied to and accepted offers of admission to the department or program applying for the training grant. The second factor is an indicator of the external perception of the department's/program's quality.

By either number or dollar amount, UT System health institutions have a lower ratio of training grants to research grants, which suggests that the *perceived* quality or desirability of doctoral and postdoctoral education programs is not commensurate with the peer assessed quality of faculty research.

Another related parameter is the ratio of doctoral students enrolled for Ph.D. study in the basic science departments of medical schools to faculty members in the same departments. A higher ratio of graduate students to faculty often reflects the amount of funding available to support student stipends, either from external grants, state appropriations, or institutional funds. These data are collected annually by the Association of American Medical Colleges[18] for all U.S. medical schools. Data from 2005, the most recent year available, is provided below for the four UT System health institutions with medical schools.

The average number of graduate students per full time basic science faculty member at all schools is 2.22. The average for the ten schools with the highest ratio is 5.62, and the range of values for the top ten schools is 4.3 - 9.4. Out of 126 U.S. medical schools, the four UT System medical schools rank 59, 76, 77, and 116 despite the fact that the UT System health institutions generated over $1 billion dollars in research expenditures in the past fiscal year. UT System health institutions must increase the recognition of their doctoral training opportunities if they are to be nationally competitive.

	Graduate Student per Faculty Ratio	Rank (out of 126)
UT Southwestern Medical Center at Dallas	2.07	59
UT Medical Branch at Galveston	1.67	76
UT Health Science Center at Houston	0.83	116
UT Health Science Center at San Antonio	1.64	77
Average of 126 U.S. Medical Schools	2.22	
Average of top 10 U.S. Medical Schools (Range = 4.3 - 9.4)	5.62	

Source: Association of American Medical Colleges

Highly Competitive Institutions have Formal Offices with Assigned Responsibility for Postdoctoral Education

The National Postdoctoral Association provides a complete list of institutions that have already established a formal postdoc office (PDO). Inspection of their most current listing reveals the following private and public institutions have already established PDOs. These are the types of institutions that UT System institutions compete with for recruiting the most talented and capable postdoctoral scholars.

Private
California Institute of Technology
Columbia University
Harvard University
Johns Hopkins University
Massachusetts Institute of Technology
Princeton University
Rice University
Stanford University
Vanderbilt University

Public
University of California, Berkeley
University of California, San Francisco
University of California, Los Angeles
University of Michigan, Ann Arbor
University of North Carolina, Chapel Hill
University of Washington, Seattle
University of Wisconsin, Madison

Opportunities for External Funding of Major Trans-disciplinary Programs are increasing

The opportunities to obtain funding for trans-disciplinary research and education are increasing rapidly, and in discussions with faculty, doctoral students, postdoctoral scholars, and administrative leaders the Task Force consistently heard that UT System institutions must be competitive for this type of funding in the future. A search of the NIH website by keywords for "multi-investigator" and "interdisciplinary" Request for Applications (RFA) in biomedical sciences issued in 2006-07 revealed the following list, which is meant to be illustrative and not exhaustive.

Multi-investigator and Interdisciplinary Programs Funded by the NIH in 2006-07

Funding Source	Program Funding/year	Duration	Program
National Institute of Dental and Craniofacial Research	$10,000,000	7 years	Centers for Research to Reduce Disparities in Oral Health
National Institute of Mental Health and the National Human Genome Research Institute	$70,000,000	5 years	Centers for "drug" discovery in the Molecular Libraries Screening Network
National Institute of Diabetes and Digestive and Kidney Diseases	$2,000,000	5 years	Kidney Research Core Centers
National Institute of Environmental Health Sciences and National Institute of Aging	$750,000	5 years	Centers for Neurodegeneration Science
National Institutes of Health	$38,000,000	5 years	Clinical and Translation Science Centers
National Institute of Allergy and Infectious Diseases	$6,000,000	5 years	Networks for Pathogenesis Research in Women
The National Institute of Diabetes and Digestive and Kidney Diseases	$1,500,000	5 years	Obesity and Nutrition Research Centers
National Institute of Neurological Disorders and Stroke and the National Institute of Arthritis and Musculoskeletal and Skin Diseases	$1,000,000	varies	Translational research projects in muscular dystrophy
National Institute of Mental Health	$1,200,000	5 years	Formative Interdisciplinary Developmental Science Centers for Mental Health
National Institute of Mental Health	$3,000,000	5 years	Interdisciplinary Developmental Science Centers for Mental Health
National Human Genome Research Institute and National Institute of Mental Health	$20,000,000	5 years	Centers of Excellence in Genomic Science

Source: National Institutes of Health

UT System institutions must be positioned to be competitive for these types of awards which are becoming increasingly common in many areas of research and post baccalaureate research education.

APPENDIX 5
The K-12 Pipeline

Education in primary and secondary levels is extremely important to the future of graduate education because that foundation is critical to the success of students in college. Preparation in written and oral communication skills, reading comprehension, and basic quantitative thinking is important for students to succeed. Thus, it is imperative that all levels of education be aligned together in terms of standards, expectations, and agreements as to what students should be able to know by the end of each transition. This will require significant efforts to build seamless transitions from middle schools through graduate and post-graduate education.

Improving public education is everybody's responsibility. However, there are key players that should begin the conversations, and undergraduate education officials should lead the analysis of the problems that currently exist in this area, working with state policymakers and high schools to address what it means for students to be college ready. Graduate schools, graduate students, and postdoctoral fellows should be encouraged to participate voluntarily in ongoing and sustained efforts to improve K-12 education, such as providing enrichment and professional development opportunities for K-12 teachers, acting as role models or mentors to K-12 students, or working with policymakers to improve public education standards. Graduate schools could work with undergraduate and high school educators to develop recommended curricula to prepare students for success at all levels of education. They should take advantage of the work done or being done by professional societies.

The Task Force recommends that the UT System:

- Consider developing a central repository of information and resources to aid those individuals or programs who want to participate in this effort to improve public K-12 education; this would include information about available resources from professional societies and education groups, and identifying possible sources of support for interested individuals or programs.
- Focus their efforts to improve secondary education through already successful programs such the Institute for Public School Initiatives and on encouraging and supporting individual institutions to work with elementary, junior high, and high schools and community colleges in their campus regions
- Promote college readiness programs such as AVID, International Baccalaureate, and Advanced Placement as possible models for secondary education.
- Encourage and facilitate the development and dissemination of teacher professional development programs, particularly for science and mathematics, for middle and high school teachers.

These suggestions are in line with and reinforce recommendations from The National Academies[19] and The Academy of Medicine, Engineering, and Science of Texas.

APPENDIX 6
Acknowledgements

The UT System gratefully acknowledges the contributions of the Task Force members.

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TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT HEALTH RELATED INSTITUTIONS

	Fall	2001	2006	# Change 2001-2006	% Change 2001-2006	% Distribution 2001	% Distribution 2006
Total Enrollment		9,480	11,235	1,755	18.5%		
	Undergraduate	2,126	1,925	-201	-9.5%	22.4%	17.1%
	Graduate	3,324	5,049	1,725	51.9%	35.1%	44.9%
	Professional	4,030	4,261	231	5.7%	42.5%	37.9%
	Male	3,934	4,480	546	13.9%	41.5%	39.9%
	Female	5,546	6,755	1,209	21.8%	58.5%	60.1%
	White	5,507	5,639	132	2.4%	58.1%	50.2%
	African-American	556	726	170	30.6%	5.9%	6.5%
	Hispanic	1,450	1,596	146	10.1%	15.3%	14.2%
	Asian-American	1,146	1,445	299	26.1%	12.1%	12.9%
	Native American	47	49	2	4.3%	0.5%	0.4%
	International	581	1,325	744	128.1%	6.1%	11.8%
	Unknown	193	455	262	135.8%	2.0%	4.0%
Undergraduate	Total	2,126	1,925	-201	-9.5%		
	Male	487	445	-42	-8.6%	22.9%	23.1%
	Female	1,639	1,480	-159	-9.7%	77.1%	76.9%
	White	1,178	923	-255	-21.6%	55.4%	47.9%
	African-American	208	176	-32	-15.4%	9.8%	9.1%
	Hispanic	494	393	-101	-20.4%	23.2%	20.4%
	Asian-American	140	261	121	86.4%	6.6%	13.6%
	Native American	11	10	-1	-9.1%	0.5%	0.5%
	International	25	76	51	204.0%	1.2%	3.9%
	Unknown	70	86	16	22.9%	3.3%	4.5%
Graduate	Total	3,324	5,049	1,725	51.9%		
	Male	1,229	1,856	627	51.0%	37.0%	36.8%
	Female	2,095	3,193	1,098	52.4%	63.0%	63.2%
	White	1,883	2,317	434	23.0%	56.6%	45.9%
	African-American	168	327	159	94.6%	5.1%	6.5%
	Hispanic	373	573	200	53.6%	11.2%	11.3%
	Asian-American	291	412	121	41.6%	8.8%	8.2%
	Native American	20	24	4	20.0%	0.6%	0.5%
	International	520	1,214	694	133.5%	15.6%	24.0%
	Unknown	69	182	113	163.8%	2.1%	3.6%
Professional	Total	4,030	4,261	231	5.7%		
	Male	2,218	2,179	-39	-1.8%	55.0%	51.1%
	Female	1,812	2,082	270	14.9%	45.0%	48.9%
	White	2,446	2,399	-47	-1.9%	60.7%	56.3%
	African-American	180	223	43	23.9%	4.5%	5.2%
	Hispanic	583	630	47	8.1%	14.5%	14.8%
	Asian-American	715	772	57	8.0%	17.7%	18.1%
	Native American	16	15	-1	-6.3%	0.4%	0.4%
	International	36	35	-1	-2.8%	0.9%	0.8%
	Unknown	54	187	133	246.3%	1.3%	4.4%

TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT SOUTHWESTERN

	Fall	2001	2006	# Change 2001-2006	% Change 2001-2006	% Distribution 2001	% Distribution 2006
Total Enrollment		1,554	2,396	842	54.2%		
	Undergraduate	221	189	-32	-14.5%	14.2%	7.9%
	Graduate	520	1,282	762	146.5%	33.5%	53.5%
	Professional	813	925	112	13.8%	52.3%	38.6%
	Male	790	1,234	444	56.2%	50.8%	51.5%
	Female	764	1,162	398	52.1%	49.2%	48.5%
	White	872	993	121	13.9%	56.1%	41.4%
	African-American	79	101	22	27.8%	5.1%	4.2%
	Hispanic	130	209	79	60.8%	8.4%	8.7%
	Asian-American	281	390	109	38.8%	18.1%	16.3%
	Native American	7	10	3	42.9%	0.5%	0.4%
	International	122	576	454	372.1%	7.9%	24.0%
	Unknown	63	117	54	85.7%	4.1%	4.9%
Undergraduate	Total	221	189	-32	-14.5%		
	Male	63	80	17	27.0%	28.5%	42.3%
	Female	158	109	-49	-31.0%	71.5%	57.7%
	White	123	69	-54	-43.9%	55.7%	36.5%
	African-American	28	17	-11	-39.3%	12.7%	9.0%
	Hispanic	22	18	-4	-18.2%	10.0%	9.5%
	Asian-American	12	29	17	141.7%	5.4%	15.3%
	Native American	3	4	1	33.3%	1.4%	2.1%
	International	10	30	20	200.0%	4.5%	15.9%
	Unknown	23	22	-1	-4.3%	10.4%	11.6%
Graduate	Total	520	1,282	762	146.5%		
	Male	238	644	406	170.6%	45.8%	50.2%
	Female	282	638	356	126.2%	54.2%	49.8%
	White	317	489	172	54.3%	61.0%	38.1%
	African-American	7	28	21	300.0%	1.3%	2.2%
	Hispanic	26	70	44	169.2%	5.0%	5.5%
	Asian-American	40	111	71	177.5%	7.7%	8.7%
	Native American	3	4	1	33.3%	0.6%	0.3%
	International	106	535	429	404.7%	20.4%	41.7%
	Unknown	21	45	24	114.3%	4.0%	3.5%
Professional	Total	813	925	112	13.8%		
	Male	489	510	21	4.3%	60.1%	55.1%
	Female	324	415	91	28.1%	39.9%	44.9%
	White	432	435	3	0.7%	53.1%	47.0%
	African-American	44	56	12	27.3%	5.4%	6.1%
	Hispanic	82	121	39	47.6%	10.1%	13.1%
	Asian-American	229	250	21	9.2%	28.2%	27.0%
	Native American	1	2	1	100.0%	0.1%	0.2%
	International	6	11	5	83.3%	0.7%	1.2%
	Unknown	19	50	31	163.2%	2.3%	5.4%

TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT MEDICAL BRANCH GALVESTON

	Fall	2001	2006	# Change 2001-2006	% Change 2001-2006	% Distribution 2001	% Distribution 2006
Total Enrollment		1,927	2,255	328	17.0%		
	Undergraduate	622	536	-86	-13.8%	32.3%	23.8%
	Graduate	482	858	376	78.0%	25.0%	38.0%
	Professional	823	861	38	4.6%	42.7%	38.2%
	Male	708	791	83	11.7%	36.7%	35.1%
	Female	1,219	1,464	245	20.1%	63.3%	64.9%
	White	1,100	1,265	165	15.0%	57.1%	56.1%
	African-American	167	210	43	25.7%	8.7%	9.3%
	Hispanic	302	280	-22	-7.3%	15.7%	12.4%
	Asian-American	225	289	64	28.4%	11.7%	12.8%
	Native American	11	7	-4	-36.4%	0.6%	0.3%
	International	80	103	23	28.8%	4.2%	4.6%
	Unknown	42	101	59	140.5%	2.2%	4.5%
Undergraduate	Total	622	536	-86	-13.8%		
	Male	98	117	19	19.4%	15.8%	21.8%
	Female	524	419	-105	-20.0%	84.2%	78.2%
	White	392	302	-90	-23.0%	63.0%	56.3%
	African-American	73	55	-18	-24.7%	11.7%	10.3%
	Hispanic	91	70	-21	-23.1%	14.6%	13.1%
	Asian-American	40	84	44	110.0%	6.4%	15.7%
	Native American	3	0	-3	-100.0%	0.5%	0.0%
	International	4	12	8	200.0%	0.6%	2.2%
	Unknown	19	13	-6	-31.6%	3.1%	2.4%
Graduate	Total	482	858	376	78.0%		
	Male	166	242	76	45.8%	34.4%	28.2%
	Female	316	616	300	94.9%	65.6%	71.8%
	White	304	523	219	72.0%	63.1%	61.0%
	African-American	17	76	59	347.1%	3.5%	8.9%
	Hispanic	45	76	31	68.9%	9.3%	8.9%
	Asian-American	31	51	20	64.5%	6.4%	5.9%
	Native American	5	2	-3	-60.0%	1.0%	0.2%
	International	74	87	13	17.6%	15.4%	10.1%
	Unknown	6	43	37	616.7%	1.2%	5.0%
Professional	Total	823	861	38	4.6%		
	Male	444	432	-12	-2.7%	53.9%	50.2%
	Female	379	429	50	13.2%	46.1%	49.8%
	White	404	440	36	8.9%	49.1%	51.1%
	African-American	77	79	2	2.6%	9.4%	9.2%
	Hispanic	166	134	-32	-19.3%	20.2%	15.6%
	Asian-American	154	154	0	0.0%	18.7%	17.9%
	Native American	3	5	2	66.7%	0.4%	0.6%
	International	2	4	2	100.0%	0.2%	0.5%
	Unknown	17	45	28	164.7%	2.1%	5.2%

TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT HEALTH SCIENCE CENTER HOUSTON

	Fall	2001	2006	# Change 2001-2006	% Change 2001-2006	% Distribution 2001	% Distribution 2006
Total Enrollment		3,286	3,651	365	11.1%		
	Undergraduate	332	408	76	22.9%	10.1%	11.2%
	Graduate	1,785	2,024	239	13.4%	54.3%	55.4%
	Professional	1,169	1,219	50	4.3%	35.6%	33.4%
	Male	1,325	1,398	73	5.5%	40.3%	38.3%
	Female	1,961	2,253	292	14.9%	59.7%	61.7%
	White	1,948	1,910	-38	-2.0%	59.3%	52.3%
	African-American	210	254	44	21.0%	6.4%	7.0%
	Hispanic	380	447	67	17.6%	11.6%	12.2%
	Asian-American	430	471	41	9.5%	13.1%	12.9%
	Native American	17	21	4	23.5%	0.5%	0.6%
	International	276	477	201	72.8%	8.4%	13.1%
	Unknown	25	71	46	184.0%	0.8%	1.9%
Undergraduate	Total	332	408	76	22.9%		
	Male	33	52	19	57.6%	9.9%	12.7%
	Female	299	356	57	19.1%	90.1%	87.3%
	White	201	214	13	6.5%	60.5%	52.5%
	African-American	46	36	-10	-21.7%	13.9%	8.8%
	Hispanic	42	60	18	42.9%	12.7%	14.7%
	Asian-American	40	79	39	97.5%	12.0%	19.4%
	Native American	0	2	2		0.0%	0.5%
	International	3	15	12	400.0%	0.9%	3.7%
	Unknown	0	2	2		0.0%	0.5%
Graduate	Total	1,785	2,024	239	13.4%		
	Male	635	695	60	9.4%	35.6%	34.3%
	Female	1,150	1,329	179	15.6%	64.4%	65.7%
	White	964	910	-54	-5.6%	54.0%	45.0%
	African-American	125	176	51	40.8%	7.0%	8.7%
	Hispanic	213	232	19	8.9%	11.9%	11.5%
	Asian-American	202	207	5	2.5%	11.3%	10.2%
	Native American	11	14	3	27.3%	0.6%	0.7%
	International	252	449	197	78.2%	14.1%	22.2%
	Unknown	18	36	18	100.0%	1.0%	1.8%
Professional	Total	1,169	1,219	50	4.3%		
	Male	657	651	-6	-0.9%	56.2%	53.4%
	Female	512	568	56	10.9%	43.8%	46.6%
	White	783	786	3	0.4%	67.0%	64.5%
	African-American	39	42	3	7.7%	3.3%	3.4%
	Hispanic	125	155	30	24.0%	10.7%	12.7%
	Asian-American	188	185	-3	-1.6%	16.1%	15.2%
	Native American	6	5	-1	-16.7%	0.5%	0.4%
	International	21	13	-8	-38.1%	1.8%	1.1%
	Unknown	7	33	26	371.4%	0.6%	2.7%

TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT HEALTH SCIENCE CENTER SAN ANTONIO

	Fall	2001	2006	# Change 2001-2006	% Change 2001-2006	% Distribution 2001	% Distribution 2006
Total Enrollment		2,665	2,825	160	6.0%		
	Undergraduate	903	684	-219	-24.3%	33.9%	24.2%
	Graduate	537	885	348	64.8%	20.2%	31.3%
	Professional	1,225	1,256	31	2.5%	46.0%	44.5%
	Male	1,093	1,016	-77	-7.0%	41.0%	36.0%
	Female	1,572	1,809	237	15.1%	59.0%	64.0%
	White	1,556	1,429	-127	-8.2%	58.4%	50.6%
	African-American	97	144	47	48.5%	3.6%	5.1%
	Hispanic	637	645	8	1.3%	23.9%	22.8%
	Asian-American	200	270	70	35.0%	7.5%	9.6%
	Native American	11	11	0	0.0%	0.4%	0.4%
	International	102	160	58	56.9%	3.8%	5.7%
	Unknown	62	166	104	167.7%	2.3%	5.9%
Undergraduate	Total	903	684	-219	-24.3%		
	Male	275	155	-120	-43.6%	30.5%	22.7%
	Female	628	529	-99	-15.8%	69.5%	77.3%
	White	431	296	-135	-31.3%	47.7%	43.3%
	African-American	58	51	-7	-12.1%	6.4%	7.5%
	Hispanic	338	230	-108	-32.0%	37.4%	33.6%
	Asian-American	38	44	6	15.8%	4.2%	6.4%
	Native American	4	4	0	0.0%	0.4%	0.6%
	International	7	10	3	42.9%	0.8%	1.5%
	Unknown	27	49	22	81.5%	3.0%	7.2%
Graduate	Total	537	885	348	64.8%		
	Male	190	275	85	44.7%	35.4%	31.1%
	Female	347	610	263	75.8%	64.6%	68.9%
	White	298	395	97	32.6%	55.5%	44.6%
	African-American	19	47	28	147.4%	3.5%	5.3%
	Hispanic	89	195	106	119.1%	16.6%	22.0%
	Asian-American	18	43	25	138.9%	3.4%	4.9%
	Native American	1	4	3	300.0%	0.2%	0.5%
	International	88	143	55	62.5%	16.4%	16.2%
	Unknown	24	58	34	141.7%	4.5%	6.6%
Professional	Total	1,225	1,256	31	2.5%		
	Male	628	586	-42	-6.7%	51.3%	46.7%
	Female	597	670	73	12.2%	48.7%	53.3%
	White	827	738	-89	-10.8%	67.5%	58.8%
	African-American	20	46	26	130.0%	1.6%	3.7%
	Hispanic	210	220	10	4.8%	17.1%	17.5%
	Asian-American	144	183	39	27.1%	11.8%	14.6%
	Native American	6	3	-3	-50.0%	0.5%	0.2%
	International	7	7	0	0.0%	0.6%	0.6%
	Unknown	11	59	48	436.4%	0.9%	4.7%

TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT M. D. ANDERSON CANCER CENTER

	Fall	2001	2006	# Change 2001-2006	% Change 2001-2006	% Distribution 2001	% Distribution 2006
Total Enrollment		48	108	60	125.0%		
	Undergraduate	48	108	60	125.0%	100.0%	100.0%
	Male	18	41	23	127.8%	37.5%	38.0%
	Female	30	67	37	123.3%	62.5%	62.0%
	White	31	42	11	35.5%	64.6%	38.9%
	African-American	3	17	14	466.7%	6.3%	15.7%
	Hispanic	1	15	14	1400.0%	2.1%	13.9%
	Asian-American	10	25	15	150.0%	20.8%	23.1%
	Native American	1	0	-1	-100.0%	2.1%	0.0%
	International	1	9	8	800.0%	2.1%	8.3%
	Unknown	1	0	-1	-100.0%	2.1%	0.0%

TOTAL FALL ENROLLMENT BY LEVEL, GENDER AND ETHNICITY
UT HEALTH RELATED INSTITUTIONS

	Fall 2001	Fall 2006	# Change Fall 2001 to Fall 2006	% Change Fall 2001 to Fall 2006
Total Enrollment	**9,480**	**11,235**	**1,755**	**18.5%**
Undergraduate	2,126	1,925	-201	-9.5%
Graduate	*3,324*	*5,049*	*1,725*	*51.9%*
Professional	4,030	4,261	231	5.7%
Male	3,934	4,480	546	13.9%
Female	*5,546*	*6,755*	*1,209*	*21.8%*
White	5,507	5,639	132	2.4%
African-American	556	726	170	30.6%
Hispanic	1,450	1,596	146	10.1%
Asian-American	1,146	1,445	299	26.1%
Native American	47	49	2	4.3%
International	*581*	*1,325*	*744*	*128.1%*
Unknown	*193*	*455*	*262*	*135.8%*

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October 2007

FALL ENROLLMENT CHANGES BY LEVEL, GENDER AND ETHNICITY
UT HEALTH RELATED INSTITUTIONS

	Fall 2001	Fall 2006	# Change Fall 2001 to Fall 2006	% Change Fall 2001 to Fall 2006	% Distribution	
Total Enrollment	**9,480**	**11,235**	**1,755**	**18.5%**		
Graduate Enrollment	**3,324**	**5,049**	**1,725**	**51.9%**		
Male	1,229	1,856	627	51.0%	37.0%	36.8%
Female	2,095	3,193	1,098	52.4%	63.0%	63.2%
White	1,883	2,317	434	23.0%	56.6%	45.9%
African-American	*168*	*327*	*159*	*94.6%*	*5.1%*	*6.5%*
Hispanic	*373*	*573*	*200*	*53.6%*	*11.2%*	*11.3%*
Asian American	291	412	121	41.6%	8.8%	8.2%
Native American	20	24	4	20.0%	0.6%	0.5%
International	*520*	*1,214*	*694*	*133.5%*	*15.6%*	*24.0%*
Unknown	69	182	113	163.8%	2.1%	3.6%

Prepared by Office of Health Affairs
October 2007

FALL ENROLLMENT CHANGES BY LEVEL, GENDER AND ETHNICITY
UT HEALTH RELATED INSTITUTIONS

	Fall 2001	Fall 2006	# Change Fall 2001 to Fall 2006	% Change Fall 2001 to Fall 2006	% Distribution	
Total Enrollment	**9,480**	**11,235**	**1,755**	**18.5%**		
Professional Enrollment	**4,030**	**4,261**	**231**	**5.7%**		
Male	2,218	2,179	-39	-1.8%	55.0%	51.1%
Female	*1,812*	*2,082*	*270*	*14.9%*	*45.0%*	*48.9%*
White	*2,446*	*2,399*	*-47*	*-1.9%*	*60.7%*	*56.3%*
African-American	*180*	*223*	*43*	*23.9%*	*4.5%*	*5.2%*
Hispanic	*583*	*630*	*47*	*8.1%*	*14.5%*	*14.8%*
Asian American	715	772	57	8.0%	17.7%	18.1%
Native American	16	15	-1	-6.3%	0.4%	0.4%
International	36	35	-1	-2.8%	0.9%	0.8%
Unknown	54	187	133	246.3%	1.3%	4.4%

Prepared of Office of Health Affairs
October 2007

FALL ENROLLMENT CHANGES BY LEVEL, GENDER AND ETHNICITY
UT HEALTH RELATED INSTITUTIONS

	Fall 2001	Fall 2006	# Change Fall 2001 to Fall 2006	% Change Fall 2001 to Fall 2006	% Distribution	
Total Enrollment	**9,480**	**11,235**	**1,755**	**18.5%**		
Professional Enrollment	**4,030**	**4,261**	**231**	**5.7%**		
Medical Schoool Enrollment	**3,294**	**3,506**	**212**	**6.4%**		
Male	1,818	1,769	-49	-2.7%	55.2%	50.5%
Female	*1,476*	*1,737*	*261*	*17.7%*	*44.8%*	*49.5%*
White	*1,991*	*1,967*	*-24*	*-1.2%*	*60.4%*	*56.1%*
African-American	*162*	*198*	*36*	*22.2%*	*4.9%*	*5.6%*
Hispanic	*487*	*515*	*28*	*5.7%*	*14.8%*	*14.7%*
Asian American	589	643	54	9.2%	17.9%	18.3%
Native American	13	14	1	7.7%	0.4%	0.4%
International	9	16	7	77.8%	0.3%	0.5%
Unknown	43	153	110	255.8%	1.3%	4.4%

Prepared by Office of Health Affairs
October 2007

HISPANIC BUSINESS Magazine and HispanicBusiness.com
September 2007

Top 10 Best Medical Schools for Hispanics

1. The University of Texas Southwestern Medical Center at Dallas
The University of Texas Southwestern Medical School at Dallas
Dallas, Texas
www.utsouthwestern.edu/admissions

Total medical school enrollment...925
Hispanic enrollment...121
Percentage...13%
M.D. degrees earned...217
Degrees earned by Hispanics...21
Percentages...10%
Full-time faculty...1,821
Full-time Hispanic faculty...95
Percentage...5%

Diversity Statement: U. T. Southwestern Medical School achieves its dedication to diversity through one of its missions which emphasizes educating doctors who will practice in medically underserved areas of Texas.

2. Stanford University
School of Medicine
Stanford, California
www.med.stanford.edu

Total medical school enrollment...476
Hispanic enrollment...71
Percentage...15%
M.D. degrees earned...99
Degrees earned by Hispanics...14
Percentage...14%
Full-time faculty...751
Full-time Hispanic faculty...28
Percentage...4%

Diversity Statement: Stanford is committed to being a premier research-intensive medical school that improves health through leadership, collaborative discoveries, and innovation in patient care, education and research. In particular, we seek individuals whose leadership will result in significant advances in the ability to care for patients.

3. University of Miami

Leonard M. Miller School of Medicine
Miami, Florida
www.med.miami.edu

Total medical school enrollment...651
Hispanic enrollment...92
Percentage...14%
M.D. degrees earned...452
Degrees earned by Hispanics...15
Percentage...10%
Full-time faculty...1,168
Full-time Hispanic faculty...248
Percentage...21%

Diversity Statement: The University of Miami Miller School of Medicine actively recruits and strives to retain underrepresented minorities. More so, the Miller School sponsors motivational programs for high school and college students form underrepresented and disadvantaged backgrounds who are interested in pursuing careers in health care.

4. The University of Texas Medical Branch at Galveston

School of Medicine
Galveston, Texas
www.utmb.edu/somstudentaffairs

Total medical school enrollment...861
Hispanic enrollment...134
Percentage...16%
M.D. degrees earned...183
Degrees earned by Hispanics...30
Percentage...16%
Full-time faculty...849
Full-time Hispanic faculty...50
Percentage...6%

Diversity Statement: The first Hispanic medical student was enrolled at UTMB in 1917 and graduated in 1921. Since then, UTMB has graduated an impressive number of minority students. Over the last six years, of the 1,146 UTMB medical graduates, 18 percent were Hispanic, and 24 Hispanic students graduated in the Class of 2007.

5. The University of Texas Health Science Center at San Antonio
School of Medicine
San Antonio, Texas
www.som.uthscsa.edu

Total medical school enrollment...847
Hispanic enrollment...152
Percentage...18%
M.D. degrees earned...191
Degrees earned by Hispanics...34
Percentage...18%
Full-time faculty...603
Full-time Hispanic faculty...96
Percentage...16%

Diversity Statement: The School of Medicine bestowed more M.D. degrees to Hispanics in 2006 (34), than any other medical school in the country, according to the U.S. Department of Education. "This is a strong testimony to the environment this institution provides for Hispanic students and to its commitment for them," said Dr. Francisco G. Cigarroa, president of the Health Science Center.

6. University of New Mexico
School of Medicine
Albuquerque, New Mexico
www.hsc.unm.edu/som

Total medical school enrollment...329
Hispanic enrollment...90
Percentage...27%
M.D. degrees earned...65
Degrees earned by Hispanics...16
Percentage...25%
Full-time faculty...554
Full-time Hispanic faculty...40
Percentage...7%

Diversity Statement: The UNM School of Medicine is committed to maintaining its leadership position among Hispanic Serving Institutions through innovative programs such as the Combined BA/MD Degree Program, and the Health Careers Opportunity and Minority Women in Medicine Programs.

7. The University of Texas Health Science Center at Houston

The University of Texas Medical School at Houston
Houston, Texas
www.med.uth.tmc.edu

Total medical school enrollment...871
Hispanic enrollment...106
Percentage...12%
M.D. degrees earned...207
Degrees earned by Hispanics...30
Percentage...14%
Full-time faculty...776
Full-time Hispanic faculty...53
Percentage...7%

Diversity Statement: Demonstrating high quality education in a supportive environment, the diverse student body is 20 percent underrepresented minorities. Students actively participate in NNLAMS and community outreach such as the Houston Hispanic Forum.

8. Johns Hopkins University

School of Medicine
Baltimore, Maryland
www.hopkinsmedicine.org/som

Total medical school enrollment...482
Hispanic enrollment...27
Percentage...6%
M.D. degrees earned...118
Degrees earned by Hispanics...2
Percentage...2%
Full-time faculty...2,348
Full-time Hispanic faculty...63
Percentage...3%

Diversity Statement: The Johns Hopkins School of Medicine supports medical students via one-on-one mentoring, recruitment and retention of a diverse student body and sponsoring activities to increase diversity amongst medical students.

9. Florida State University

College of Medicine
Tallahassee, Florida
www.med.fsu.edu

Total medical school enrollment...284
Hispanic enrollment...34
Percentage...12%
M.D. degrees earned...36
Degrees earned by Hispanics...4
Percentage...11%
Full-time faculty...97
Full-time Hispanic faculty...8
Percentage...8%

Diversity Statement: Creating physicians to care for Florida's medically underserved is part of our mission. In a diverse state, that means recruiting students representative of the communities in which they will practice.

10. University of Illinois at Chicago

College of Medicine
Chicago, Illinois
www.medicine.uic.edu

Total medical school enrollment...1431
Hispanic enrollment...131
Percentage...9%
M.D. degrees earned...291
Degrees earned by Hispanics...30
Percentage...10%
Full-time faculty...1,090
Full-time Hispanic faculty...33
Percentage...3%

Diversity Statement: The Hispanic Center of Excellence at the University of Illinois at Chicago, College of Medicine has gained national recognition for its recruitment and graduation of underrepresented students in the medical profession. In 2006 due to the efforts of HCOE, UIC had the largest Latino incoming class in the country with 51 medical students of a total of 324. In 2006 UIC graduated the largest number of Hispanics at 30.

JOINT ADMISSION MEDICAL PROGRAM

A pipeline to Medical School for economically disadvantaged students

AUTHORITY

- Created by SB 940 of 77th Texas Legislature
- Administered by JAMP Council consisting of one faculty member from each medical school in the state

PURPOSE

- Support and encourage highly qualified economically disadvantaged students in preparing for and succeeding in Medical School

OPERATION

- Partnership between 8 medical schools, 31 public academic institutions and 34 private institutions to:
  1. Award scholarships for academic years and stipends for summer internships
  2. Mentor and advise students during undergraduate years
  3. Provide summer enrichment programs at medical schools (2 summers)
  4. Guarantee admission to a medical school if all requirements are met
- Medical schools must set aside up to 10% of entering class for JAMP participants (approx. 148 slots/year)
- 288 students admitted to program since April, 2003
- 130 students currently enrolled in undergraduate institutions
- 79 students currently enrolled in medical schools

FUNDING

- $4,000,000 State funds appropriated to THECB for Program – FY02-03
- $3,490,900 State funds appropriated to THECB for Program – FY04-05
- $3,316,355 State funds appropriated to THECB for Program – FY06-07
- $5,616,355 State funds appropriated to THECB for Program – FY08-09
- Use of funds
  1. Scholarships and stipends for participating students
  2. Enhance curriculum and educational opportunities for participating JAMP students at the public academic institutions
  3. Recruit students, mentor undergraduate students, provide summer internship programs and administer the program at the medical schools

BENEFITS OF PROGRAM

- Economically disadvantaged students receive scholarships and special mentoring to help prepare for medical school
- Undergraduate academic institutions receive funds to improve curriculum and develop programs to advise and mentor students (both JAMP participants and other students)
- JAMP students encouraged to return to home area to practice medicine

Joint Admission Medical Program

Joint Admission Medical Program

- **Pipeline to Medical School for economically disadvantaged students**
- **Partnership between the 8 Medical Schools in the state and 65 public and private undergraduate institutions to achieve a more diverse medical school pool**

Legislative History

Senate Bill 940 – 77th Texas Legislature

- **Created program to support & encourage highly qualified, economically disadvantaged students pursuing a medical education**
- **Administered by the JAMP Council**
- **Medical schools must set aside 10% of entering class for JAMP participants**
- **Funds to be appropriated by the Texas Legislature**

Senate Bill 1128 – 78th Texas Legislature

- **Created Alternate Pool**
- **Added Flexibility to program entry requirements**

Senate Bill 1247 - 79th Texas Legislature

- **Changed entry year into program from freshman to sophomore year**
- **Gave Council authority to re-allocate unfilled program openings during initial selection**
- **Established a pre-admission mentoring and assistance program during freshman year for prospective applicants**

Senate Bill 1601 – 80th Texas Legislature

- **Expanded participation of private or independent institutions**
- **Gives Community College students the opportunity to transfer to a four-year institution and be eligible to apply to the program**
- **Clarified scope of JAMP Council's ability to accept gifts and engage in fundraising**

Joint Admission Medical Program

Program Objectives

- **Select highly qualified, dedicated students through extensive selection process**
- **Provide undergraduate scholarships to participating students**
- **Provide summer internships at medical schools during undergraduate years**
- **Provide stipends for summer internships during undergraduate years**
- **Provide advising, mentoring and tutoring from undergraduate and medical schools throughout the year**
- **Provide guaranteed admission to a medical school if all requirements are met**
- **Provide scholarships and mentoring to participating students admitted to medical schools**
- **Provide funds to public undergraduate schools to enhance the quality of education**

Accomplishments

- **Selected four classes of JAMP students**
- **Successfully completed five summer internship programs**
  - **MCAT Review, Academic/Science Enrichment Component, Ethics, Clinical Experiences**
- **Created innovative mentoring programs at medical schools for undergraduate students**
- **Two classes entered medical schools**
- **Established online communication and message center to supplement mentoring efforts provided by medical schools**
- **Established a undergraduate JAMP Faculty Director (JFD) Consultant group to improve communication between all JFDs and the JAMP Council**

A Look to the Future

- **Create freshman year programs for prospective health professions students**
- **Develop a statewide online supplemental instruction program to support educational needs of JAMP and other health professions students**
- **Continue to seek funding through legislature and private sources to increase the number of participants to achieve the intent of the original legislation**
- **Increase the number of participating students to full ten percent of medical school entering classes**

Joint Admission Medical Program

Accomplishments

Selected Four Classes of JAMP Students

	1st Year	2nd Year	3rd Year	4th Year
# of Students Accepted	81	69	69	69

Characteristics

	1st Year	2nd Year	3rd Year	4th Year
Male	**31%**	**35%**	**33%**	**29%**
Female	**69%**	**65%**	**67%**	**71%**
# of Institutions with Participating Students	**30**	**36**	**30**	**31**
Public	**22**	**28**	**27**	**25**
Private/Independent	**8**	**8**	**3**	**6**

Students by Ethnicity

	1st Year	2nd Year	3rd Year	4th Year
African American	**12%**	**13%**	**9%**	**9%**
Hispanic	**35%**	**32%**	**38%**	**36%**
Asian Pacific Islander	**21%**	**20%**	**16%**	**22%**
Caucasian	**28%**	**29%**	**33%**	**32%**
All Others	**4%**	**6%**	**1%**	**1%**

Joint Admission Medical Program

Current Enrollment by Undergraduate Institution

Public Institutions

Angelo State University	1	Texas Woman's University	3
Lamar University	4	The University of Texas at Arlington	3
Midwestern State University	0	The University of Texas at Austin	16
Prairie View A&M University	2	The University of Texas at Brownsville	5
Sam Houston State University	2	The University of Texas at Dallas	8
Stephen F. Austin State University	2	The University of Texas at El Paso	2
Tarleton State University	2	The University of Texas at San Antonio	8
Texas A&M International University	1	The University of Texas at Tyler	1
Texas A&M University	18	The University of Texas of the Permian Basin	4
Texas A&M University – Corpus Christi	2	The University of Texas – Pan American	8
Texas A&M University – Galveston	1	University of Houston	11
Texas A&M University – Kingsville	3	University of Houston – Downtown	2
Texas Southern University	1	University of North Texas	4
Texas State University – San Marcos	1	West Texas A&M University	1
Texas Tech University	5		

Private Institutions

Baylor University	2	Southwestern University	1
Dallas Baptist University	1	University of Saint Thomas	1
Lubbock Christian University	2	Wiley College	1
Saint Mary's University	1		

Total of Current Undergraduate Participating Students = 130

Joint Admission Medical Program

Current Enrollment of JAMP students by Medical School

Baylor College of Medicine	7
Texas A&M University Health Science Center	5
Texas Tech Health Sciences Center	9
University of North Texas Health Science Center/Texas College of Osteopathic Medicine	9
University of Texas Southwestern Medical Center	13
University of Texas Medical Branch	12
University of Texas Health Science Center at Houston	12
University of Texas Health Science Center at San Antonio	12

Total of Current Medical School Participating Students = 79

Joint Admission Medical Program

Students Accepted into Medical School

	Entry Year 2006	2007
Baylor College of Medicine	3	4
Texas Tech Univ. Health Sciences Center	4	5
Texas A&M Univ. System Health Science Center	2	4
The University of North Texas Health Science Center /Texas College of Osteopathic Medicine	4	5
The Univ. of Texas Southwestern Medical Center at Dallas	7	7
The Univ. of Texas Medical Branch at Galveston	6	9
The Univ. of Texas Health Science Center at Houston	6	7
The Univ. of Texas Health Science Center at San Antonio	7	8
Total Accepted to Medical School	**39**	**49**

Students Accepted into Dental School

The University of Texas Health Science Center at San Antonio	1

Total Participants Accepted to a Professional School	**40***	**49***

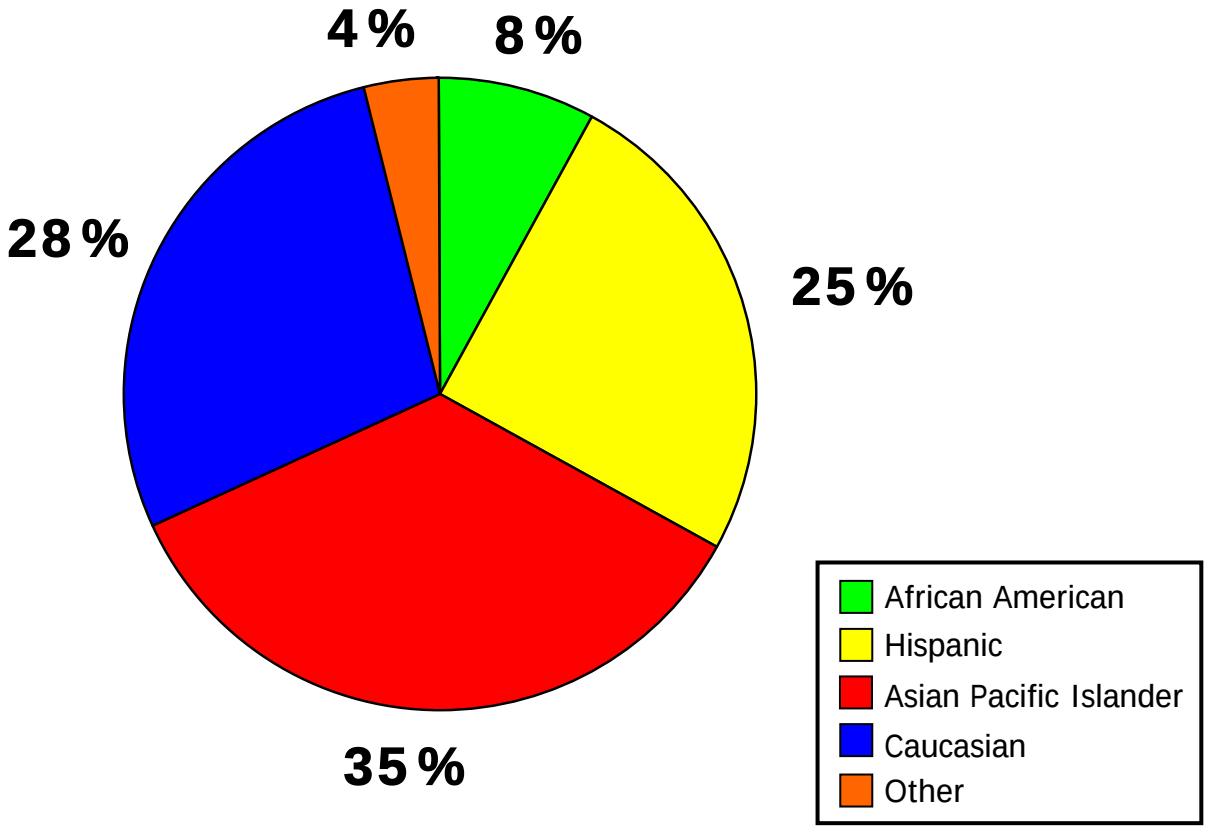
* 79 Active JAMP students were accepted into Medical School
9 Former JAMP students were also accepted into Medical School (4 in 2006 & 5 in 2007)
1 Former student was admitted into Dental School in 2006

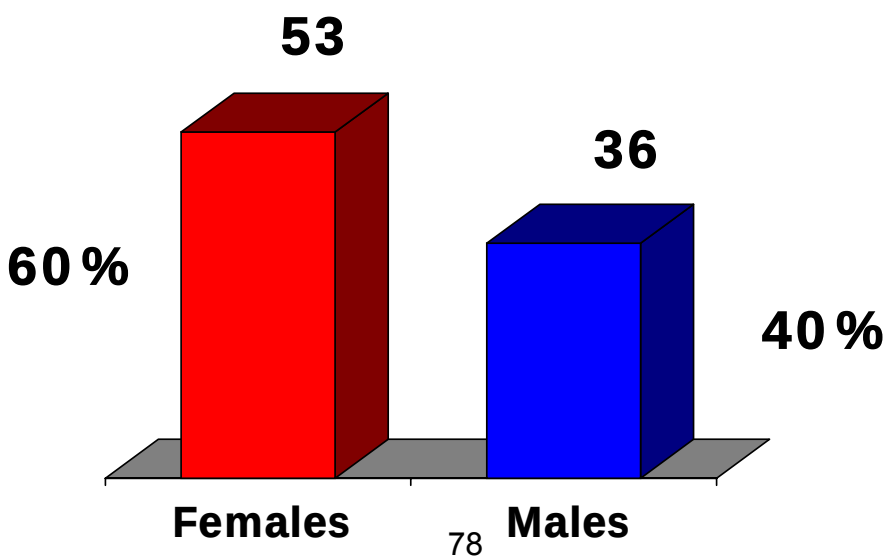
Undergraduate Universities

Abilene Christian University	1	Texas Christian University	1
Angelo State University	4	Texas State University – San Marcos	1
Austin College	1	Texas Tech University	3
Baylor University	1	Texas Woman's University	1
Hardin-Simmons University	1	The University of Texas – Pan American	2
Houston Baptist University	1	The University of Texas at Arlington	5
Lubbock Christian University	1	The University of Texas at Austin	15
Prairie View A&M University	1	The University of Texas at Dallas	3
Rice University	1	The University of Texas at El Paso	1
Saint Mary's University	1	The University of Texas at San Antonio	1
Southern Methodist University	1	The University of Texas at Tyler	2
Stephen F. Austin State University	1	The University of Texas of the Permian Basin	1
Tarleton State University	2	Trinity University	1
Texas A&M International University	3	University of Houston	8
Texas A&M University	12	University of Houston Downtown	1
Texas A&M University - Commerce	1	University of North Texas	4
Texas A&M University – Corpus Christi	1	University of Saint Thomas	1
Texas A&M University - Galveston	1	Wayland Baptist University	1
Texas A&M University – Kingsville	2		

Joint Admission Medical Program

Ethnicity of JAMP students accepted to Medical & Dental School





THE UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER
Outreach, Recruitment and Retention Programs

Outreach & Recruitment

STARS Program. The STARS Program is a vehicle for forming partnerships among UT Southwestern, life science teachers in North Texas, and high school students in the DFW metroplex interested in exploring careers in biomedicine. STARS is multidimensional, offering programs for students on the UT Southwestern campus as well as outreach programs to the junior and senior high school science teachers in the classrooms. The program offers a number of opportunities for students to learn about science and health-related careers. STARS regularly provide tours of UT Southwestern facilities for high school and middle school classes. These tours include sessions that make students aware of the various career opportunities in science, medicine, and allied health. STARS also provides Science Ambassadors, UT Southwestern faculty and students who visit classrooms to speak on various subjects including careers in science and health care. STARS has recently initiated a partnership with a nearby charter school to foster science education, and UTSW/STARS is collaborating with the O'Donnell Foundation, Advanced Placement Strategies, and the Dallas Museum of Nature and Science to build virtual instruments and science suitcases (portable science demonstration and activities kits) to foster excitement and curiosity in high school biology students.

Health Professions Recruitment and Exposure Program. HPREP was initiated in 1992 and is sponsored jointly by UT Southwestern and the Dallas Independent School District. The aim of HPREP is to provide high school students (typically 9th and 10th graders) access to UT Southwestern as well as to health professions role models from culturally diverse backgrounds. Students from local Dallas high schools who have been identified as having an interest in the health professions are recruited to participate in HPREP. Every Saturday for seven weeks, approximately one hundred high school students from diverse cultures attend seminars designed to educate them on academic financial and social issues they will face in preparing for a health career. The program uses medical, graduate and allied health students, faculty and staff to motivate and advise.

High School – Middle School Visits. Representatives from the Southwestern Allied Health Sciences school annually make visits to various high schools to lecture. These lectures/presentations typically focus on a certain professional field (such as medical laboratory sciences or clinical nutrition) and serve to introduce high school students to the field and the necessary high school preparation to enter that field.

Camp Med is a one or two-week summer day camp for about 15 underrepresented and disadvantaged high school students interested in heath careers. Coordinated by the DFW AHEC, Camp Med is held each summer in Dallas & Tarrant Counties. Camp Med Dallas is held on the Southwestern Allied Health Sciences School Campus. Campers participate in hands-on health science learning activities, field trips to hospitals and clinics, and presentations from minority role models.

DFW AHEC Mentorship Program identifies approximately 25 middle school students each year attending Thomas Edison Middle Learning Center in Dallas ISD. This school is in a medically underserved area and serves minority students in West Dallas. Since 2002, medical students from UT Southwestern have been recruited to serve as mentors during the school year. After receiving training through the school district and AHEC, mentors visit their student at school at least once a month. The middle school students will participate in one field trip to a clinical facility and one field trip to the UTSW campus where they meet with their mentor for lunch.

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Medical Explorer Program has been operational at UT Southwestern since the January of 2006. This is a program of the Boy Scouts and is open to all genders. Students from area high schools meet once a month on Monday evenings at UT Southwestern. They participate in hands-on activities and interact with faculty who provide lectures and demonstrations of their research. Currently, thirty-four high school students are members of this post.

Emmett J. Conrad Leadership Program. Established in 1993, the Conrad Program is available to college students who are residents in Texas Senatorial District 23. Students selected for the program are given an internship placement at UT Southwestern focusing on research, service, or patient care. Throughout the paid summer experience, students participate in weekly workshops and tours of Parkland hospital. Workshops include leadership skills development, exploration of health careers, resume building, lectures by UT Southwestern faculty, and development of presentation skills.

Minority Pre-Medical Conference. The Pre-Med Conference is held annually to introduce college students to UT Southwestern and to give them guidance in their preparation for a career in medicine. Two of UT Southwestern's student organizations, the National Network of Latin American Medical Students (NNLAMS) and the Student National Medical Association (SNMA), collaborate to host the conference. Colleges and universities from all over Texas are invited to participate in the one-day event usually held in late January or early February. Sessions on admission, financial aid, and academic preparation are presented. Additionally, participants interact in small groups with a UT Southwestern faculty member or community physician. Typically, more than 250 college students attend the event.

Student National Medical Association Scholars Program. Members of the Students National Medical Association, a predominately African American group, have organized a program to provide selected undergraduate students shadowing opportunities (1/2 day to 1 day per week for 6 to 8 weeks) with a physician practicing in the Dallas community. Students selected for this program must meet certain academic qualifications and indicate an interest in providing health care in under served areas.

Summer Undergraduate Research Fellowship. The SURF program at UT Southwestern is an intensive summer research training experience designed for college students who are preparing for careers in biological research. Fellows spend ten weeks pursuing individual research projects in the laboratories of UT Southwestern Graduate School faculty members. Fellows gain experience in modern research techniques, and have a chance to plan and execute an experimental strategy to answer a scientific question. The program introduces students to the sorts of projects encountered during postgraduate research training and leads to an understanding of the planning, discipline, and teamwork involved in the pursuit of basic answers to current questions in the biological sciences. At the end of the summer, fellows present their research in a poster session. In addition to laboratory research, fellows attend weekly seminars given by UT Southwestern faculty members. Informal discussions about careers in science and graduate training are also scheduled. Approximately fifty fellows participate in the summer research program. Fellows are selected by the faculty mentors and assigned to a research project according to each fellow's previous training and research interests. In the past five years, informal agreements with mentors from seven minority universities have evolved to guarantee spots in SURF for their best and brightest students. These five universities are Grambling State University, St. Mary's University, University of Texas at El Paso, University of Texas at San Antonio, University of Arizona, San Diego State University and Howard University.

Quantitative and Physical Sciences Summer Undergraduate Research Fellowship. Similar to the above-described SURF program, the QP-SURF program is an intensive summer research training experience designed for college students who are completing an undergraduate degree in the

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quantitative sciences (mathematics, chemistry, physics, and computer science) and who are interested in learning how their quantitative skills are critically important in biological research. Ten fellows spend ten weeks pursuing individual research projects in the laboratories of UT Southwestern Graduate School faculty members who merge quantitative knowledge and skills with biological questions. The program introduces students to the sorts of projects encountered during postgraduate research training and leads to an understanding of the planning, discipline, and teamwork involved in the pursuit of basic answers to current questions in the biological sciences. At the end of the summer, QP-SURF fellows present their research in a poster session. In addition to laboratory research, fellows attend weekly seminars given by UT Southwestern faculty members who began their scientific careers in the quantitative sciences and who now work in a biomedical research environment. First priority is given to minority applicants to the QP-SURF program.

UT Southwestern Undergraduate Medical Research Fellows Program. The UTSUMR program is intended to identify and develop promising student researchers who intend to pursue careers in medicine and research, but who may not pursue formal graduate education (i.e. may not pursue Ph.D. doctoral training). Students will be placed with mentors to work on specific projects under the supervision of the mentor and fellows in the mentor's laboratory. In addition, students are encouraged to attend a series of weekly luncheon seminars in which faculty and former student researchers discuss the fundamentals of basic and clinical research.

Annual Visits to Undergraduate Campuses. Representatives from UT Southwestern medical, graduate, and allied health schools visit various college campuses throughout Texas on an annual basis. These visits are both formal (such as presentations on science or health profession topics or admissions workshops) and informal (visits with individual students or advisors). The purpose for such visits is to introduce college students to UT Southwestern and the programs offered as well as to encourage students to seek careers in science and the health professions.

Texas Association of Advisors for the Health Professions and National Association for Advisors for the Health Professions. Various UT Southwestern faculty and staff annually participate with the TAAHP and the NAAHP. Interaction with collegiate pre-health professions advisors helps to better equip prospective students with accurate information about the health professions in general and UT Southwestern specifically

Regional and National Conferences. The graduate school is an active member of the Society for the Advancement of Chicanos and National Americans in Science (SACNAS). In addition to attending the yearly SACNAS meetings where there is interaction informally with many minority students and their advisors, graduate school faculty also judge posters and presentations at the meeting. Also, faculty from the graduate school attend the MARC/MBRS Research Conference each year as well as the Minority Health Professions Conference and the Lone Star Diversity Colloquium.

Health Professions and Graduate School Fairs. UT Southwestern representatives annually attend numerous collegiate health professions and graduate school fairs. These fairs, typically held on college/university campuses around Texas, allow college students to interact with faculty, current graduate/profession students and admissions professionals and to receive timely information about the degree programs and admissions requirements.

Open House/Information Sessions. Each year, various academic programs in the Southwestern Allied Health Sciences School offer events designed to introduce prospective students to the UT Southwestern campus and to their individual departmental degree programs. The events typically include a tour of the campus, meeting faculty and current students, and admissions and financial aid counseling.

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DFW Area Health Professions Fair. UT Southwestern hosted the first DFW Fair in February of 2004. A coordinated effort of UT Arlington, UT Dallas, University of North Texas and Southern Methodist University, college and university students from around the Dallas/Fort Worth Metropolitan area were invited to attend. Health Professions schools from around Texas and other states participated as well as military and test preparation representatives. More than 300 students attended the event. The advisors for the hosting schools intend to make this event an annual one.

Prospective Student Counseling and Tours. Each year, many prospective students come to visit the UT Southwestern campus either individually or in small groups. UT Southwestern faculty and staff representatives meet with them to discuss their individual needs and questions, programs available at UT Southwestern, admissions requirements, etc. In many cases, these students are taken on tours of the campus.

Medical School "MS Zero" Program. Each spring, UT Southwestern Medical School invites all newly accepted medical school applicants to the campus for a two day program to orient them to the school and to the Dallas community. The events allows them to meet some of their new medical school peers and well as interact with current medical students and UT Southwestern faculty. An extra day is added for minority students to give them an opportunity to spend time with minority faculty, community physicians, and students. The culmination of the extra day (which is the day before the two-day program) is a dinner with minority faculty and community leaders from all walks of life in the Dallas area.

Retention

Enhanced Orientation program for incoming DBS PhD students. While this program was not exclusively for minority students, the main goal of initiating the program was to increase retention of our under represented minority students. Based on a successful model utilized by the UT Southwestern Medical School, students were invited to participate in Enhanced Orientation if they met any of the following criteria:

- Lack of prerequisite courses, such as genetics or biochemistry
- More than three years since completion of last significant degree
- GRE score significantly lower than the average for accepted students
- Cumulative undergraduate GPA significantly lower than the average for accepted students
- English as a second language
- Other indications of potential academic disadvantage

Our goals for Enhanced Orientation focused on facilitating environmental, social, and academic adjustment to graduate school UT Southwestern Medical Center at Dallas. The following activities/topics were included in the Enhanced Orientation:

- Lecture Topic Preview
- Introduction to Problem Set and Discussion Group learning environments
- Introduction to critique and discussion of peer-review journal articles with particular emphasis on interpretation and synthesis of data
- Overview of successful study skills
- Orientation to computer and MP3 usage at UT Southwestern
- Introduction to Core Course tutors

In August 2006, 14 matriculating students participated in Enhanced Orientation, including 13 minority students. It is too early to determine fully the impact of the Enhanced Orientation on student success but careful analysis of the program is underway.

Our focus on enrichment for minority students is multi-level. First, we have a very active Graduate Student Organization (GSO) that provides many opportunities for graduate students to interact amongst

themselves and reach out to the community through service projects. These projects range from blood and food drives to science fair judging and teaching science programs at local elementary and middle schools with a high percentage of minority students. The GSO also sponsors competitive travel funds that afford students the opportunity to attend national meetings. This allows many minority students an opportunity to attend two meetings each year, as we ask our mentors to send students to one meeting each year. Second, UT Southwestern is home to a world-renowned graduate faculty numbering 244 who collaborate extensively scientifically. A result of this is collaborative environment is "works-in-progress" seminars, lab meetings, and journal clubs, which allow all of our students to gain expertise well beyond their own mentors. Finally, we offer minority students the opportunity to join national minority science organizations such as SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) and attend minority meetings such as ABRCMS (Annual Biomedical Research Conference for Minority Students). These experiences teach useful skills to young scientists and also provide a very strong mentoring network.

Summer Enrichment Program (SEP). A 6.5 week pre-matriculation program, SEP represents a diversity-retention initiative established to facilitate the academic, social and environmental adjustment of its participants. Prospective participants are defined as academically disadvantaged based upon the following criteria: scores on the Medical College Admissions Test, cumulative college GPA and/or associated science GPA, socio-economic status, rigor of undergraduate college curriculum, years out of school prior to medical school application and associated age, English as a second language spoken in the home, and other circumstances, e.g., learning and/or medical disability. The SEP has 20 participation slots, offered by invitation to targeted students, with each participant receiving a $2000 stipend. Its components include: 1) Learning Assessment (in the domains of reading, critical thinking, learning and study skills, learning styles, Myers-Briggs personality type, and stress level), 2) Basic Sciences Courses in Anatomy (lecture and demonstration labs) and Biochemistry (with on-line study materials) , 3) a Cardiovascular Physiology Tutorial, 4) Special Topic Seminars addressing learning skills, stress management, interpretation of learning assessment results, financial management, and library orientation, and 5) Social-Recreational Activities.

Medical School Colleges Beginning with the medical school entering class of 2007, students were divided into 6 Colleges and further divided into small groups numbering 5-7 students. Each group is assigned a senior clinical faculty member. The primary purposes are to integrate these small groups into the curriculum and provide continuity with and personal attention from a senior clinical faculty member. While not conceived as a retention program, it would be expected that students experiencing academic or personal difficulty might be identified sooner.

Tutorial Program. Tutoring is a supplementary educational program provided primarily for students who are experiencing academic difficulty in their formal coursework. Other students may participate when special circumstances exist, e.g., illness, death in family, etc. The program's main purpose is to promote student retention and advancement by facilitating student adaptation to the rigorous basic sciences coursework encountered during medical school. Students eligible for formal, small group tutorials are contacted and invited to participate after consultation with the various course directors. The amount of tutorial support provided is determined according to the individual student's needs—which could range from short term assistance in one subject to long term assistance across multiple subjects. Participation in small group, formal tutorial sessions is restricted to those students who are not performing satisfactorily and considered to be in academic jeopardy. Throughout the year, large group reviews in select basic science subjects are arranged and open to all students.

Academic Advising and Counseling. Learning skills assessment and academic advising/ counseling services are available for students experiencing academic problems. Students performing satisfactorily who are interested in doing better may also access the service.

Support for Students with Disabilities. The associate deans for student affairs oversee support services for students with disabilities. The Office of Medical Education (OME): Student Academic Assistance Services (SAAS) collaborates with the associate deans in coordinating both the external assessment and/or internal review procedure for students who either come to medical school with diagnosed learning disabilities or are subsequently evaluated to determine if a disability exists. In cases where (learning, medical, or physical) disabilities are identified and accommodations are approved by the dean(s) of student affairs, the OME: SAAS coordinates accommodation activities and participates in monitoring the progress of all disabled students. The OME serves as the examination site for students who are granted test accommodations.

USMLE Test Preparation. In the spring semester, MS2 students were invited to a seminar which addressed the topic of USMLE Step 1 test preparation. BY attending this seminar, which features a panel of third and fourth-year students who have successfully passed the exam, students are provided practical study tips and review strategies that were found to be effective by the panelists. A comprehensive handout, that was developed by the OME: SAAS Director, was distributed at the seminar and then made available to all other students upon request. Concurrently, all MS2 students were provided the results of a comprehensive survey of UT Southwestern MS3/MS4s who had taken the Step 1 which provides additional preparatory information. The USMLE: S1 Review Course, offered in the spring of 2007 consisted of a series of didactic lectures in which the following subjects were reviewed: anatomy, biochemical/ genetic disorders, microbiology, neuroscience, pathology, pharmacology, physiology, and human behavior and psychopathology.

"MED 1901": Directed Studies in Select Basic Sciences. This one-credit hour course consists of a series of nine 2-week mini-courses including: anatomy of the head & neck, biochemistry, cell biology, pharmacology (pharmacokinetics), biochemical & genetic disorders, immunology, neuroscience, pathology, and physiology. Coordinated by the OME: SAAS director, the course is designed to bolster the basic science knowledge skills of MS1/MS2 students who have experienced academic difficulty, as well as help prepare them for the USMLE: S1 exam. Invited to participate were students who received multiple marginal pass grades during the first year, or, were required to repeat the first year or second-year of medical school, or, were returning from a leave of absence to repeat the first or second-year, or, were required to remediate one subject in summer school prior to advancing to either the first or second-year level. Student attended either part-time or fulltime—with the latter being eligible to receive financial assistance. The mini-course instructors typically include one faculty member and an approximately 10 superior medical and graduate students.

Remedial Advisement. Provided to students required to make-up academic deficiencies, remedial advisement gives assistance with remediation planning.

Stress Management. This service is available to students interested in developing stress management strategies. The OME: SAAS has resources for use by students who wish to develop relaxation skills.

Communication Skills. Upon request and/or recommendation from a faculty member, the OME: SAAS director works with medical students whose communication skills are in need of development, utilizing simulated patients, video-taped role-playing and feedback.

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October 10, 2007

Development Referrals. Referrals are coordinated for students who present with needs that can best be served by other professionals both on and off-campus.

Southwestern Allied Health Sciences School (SAHSS). The OME: SAAS Director works in collaboration with the Dean's Office, SAHSS, to establish, co-coordinate and implement a battery of retention support services for the benefit of SAHSS students. These services include the following: orientation materials provided to incoming students in the summer and fall semesters, tutoring in select basic science courses, learning skills development, academic advising/counseling, stress management assistance and referrals.

THE UNIVERSITY OF TEXAS MEDICAL BRANCH AT GALVESTON
Outreach, Recruitment and Retention Programs

Recruitment

The School of Medicine Office of Student Affairs facilitates the recruitment, admissions, and matriculation of a medical school class that is of the highest quality that is proportionally representative of the state's population. The School of Medicine recruits primarily throughout the state, as well as on a national level. Student inquirers are identified through an online Student Information System at the Student Enrollment Services.

Every year the School of Medicine hosts a number of outreach activities both on and off of the campus which are designed to facilitate acceptance into medical school. Several of these programs specifically target students from disadvantaged and minority backgrounds.

Early Medical School Acceptance Program - The program is designed to provide a rigorous undergraduate educational experience to assure that students receive the academic preparation required to pursue a medical education. Upon acceptance to EMSAP, students also receive conditional acceptance to the University of Texas Medical Branch. Final matriculation into UTMB is dependent upon successful completion of all EMSAP requirements and graduation from one of the six partnership schools: Prairie View A&M University, Texas A&M International University, Texas Southern University, The University of Texas at Brownsville, The University of Texas at El Paso, and The University of Texas – Pan American at Edinburg.

Joint Admissions Medical Program - This is a special program created by the State legislature to support and encourage highly qualified, economically disadvantaged students to pursue a medical education**.** Students are recruited during there senior year in high school, as well in their first semester in a four year state university.

Research and Academic Enrichment Training Program - The University of Texas Medical Branch School of Medicine supports basic and clinical research directed to the causes, prevention and treatment for cardiovascular, pulmonary and hematological diseases. Summer research training opportunities in these areas are available at UTMB School of Medicine for 15 talented, under-represented minority undergraduate and medical students. Each student will work closely with a NIH

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October 10, 2007

funded faculty member of University of Texas Medical Branch on an exciting research project directed to these specific areas. In order to bolster the already short supply of minority biomedical researchers, we believe that by providing this opportunity, underrepresented students may become interested in pursuing career in medical or biomedical research. All trainees will participate in scientific seminars, workshops, or clinical conferences that will be held throughout the summer. At the conclusion of the program, each student will present their research at a scientific symposium held on campus.

Health Careers Mentorship Program - This program offers opportunities to undergraduates at the University of Texas at Austin who are interested in the health care field. The major goals of the program focus on emphasizing service and developing interpersonal and communication skills that will prepare students to be successful candidates for medical school. It is also designed to allow students to gain an insight into the practical aspects of the healthcare field and build rapport with health professionals. The program includes an annual day of events on the UTMB campus. While they are here they learn about the School of Medicine application process and what one may expect as a medical student on the UTMB campus.

Texas Swing - UTMB participates in the Texas Swing, a series of programs held at many of the Texas public institutions of higher education to acquaint students interested in the health professions with the requirements for admission and opportunities offered by the medical schools and other schools for health professionals.

Spring Premedical Conference - The SOM annually hosts a premedical conference in the spring for high school and college students interested in medical career. The conference affords these students the opportunity to meet and visit with our faculty and students and to tour the facility.

Night Before Reception - This is a program for students interviewing at UTMB the evening before interviews to welcome students and provide information about the School of Medicine.

Additional Outreach and Recruitment Activities
Recruitment report for the period January 1, 2007 through June 30, 2007

Colleges and career fairs visited
- Baylor University
- University of Houston
- UT Austin
- A&M University
- UT San Antonio

Community Functions
- Texas Association of Advisors in the Health Professions
- National Association of Minority Medical Educators

On campus visits
- JOINT Admission Medical Program (JAMP)
- UT Pan American
- UTMB Summer Program (RACE AND EMSAP)

Direct mailings
- UTMB Contacts by mail, email, and phone regarding summer programs and admissions

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Texas Medical & Dental Schools Application Service (TMDSAS)
October 10, 2007

Additional recruitment activities
UT Austin Clerkship Conference
UTMB Premedical Conference

Conventions
Texas Association of Advisors for the Health Professions
COE Border Consortium

Outreach Programs

Educational Outreach Student Programs are designed to provide elementary, middle and high school students' access to a wealth of basic research and clinical science information through hands-on experiences in the laboratory with cutting-edge scientific techniques. Through these programs, the UTMB scientific community plays an integral role in enhancing pre-college students' knowledge about science and encouraging students to pursue careers in science and medicine.

Saturday Biomedical Science Academy for 4th-6th grade students - The Saturday Biomedical Science Academy provides 4th-6th grade students with an exciting, enrichment experience that provides access to a wealth of basic research and clinical science information through hands-on experiments in chemistry, physics, space science and biology. This program stimulates student interest and enhances their scientific knowledge as well as enabling an appreciation for how creative, fun, and relevant science can be to everyday life.

Summer Science Camp I for 7th and 8th grade students - This summer enrichment program for 7th and 8th graders from Galveston County public and private schools has been in existence since 1993. Due to its popularity, two 4-week sessions (4 hrs/day) are provided each summer. This program provides a mechanism that allows middle school students to obtain hands-on experience in a broad range of science activities that will stimulate their knowledge of, appreciation for, and interest in biology, physics, physiology, health science, technology and related fields. It also increases student knowledge about the practical application of scientific concepts and principles to everyday life experiences. Some example activities include: designing and building bottle rockets, egg-drop competition, exploring the effects of common drugs on Daphnia, and plant tissue culture. The goal is to increase the percentage of public middle school students entering high school with the motivation and/or scientific background to pursue science or gain exposure to scientific-related fields. As a major biomedical research and health sciences center, UTMB is well suited to enhance and foster the teaching of science to local and regional pre-college students.

Summer Science Camp II for 9th and 10th grade students - This summer enrichment program focuses on 9th and 10th grade students in Galveston County public and private schools. The program consists of one 5-week session (4 hours/day) of instructional mini-training lessons derived from major state-of-the-art molecular and cellular research methodologies. Camp II students are provided with more independence while working in teams on specific research projects. They are guided by two undergraduate camp counselors and a faculty mentor. Typical activities include: basic chemistry labs, tissue culture, mitotic chromosome preparations, restriction enzyme digestion, debate on current ethical issues, Southern blotting, DNA fingerprinting, DNA sequencing concepts, polymerase chain reaction, etc. Campers complete an independent project during the last two weeks that utilizes the knowledge they have gained during the previous 3 weeks and present their results in a public seminar.

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October 10, 2007

Summer Research Program for High School Students and Teachers - The student component of the Summer Research Program serves 10th-12th grade students nationwide and provides a stimulating, hands-on, active experience in scientific research. This increases their familiarity with the scientific process and stimulates interest in pursuing future careers in research or science teaching. This program has been existence for more than 22 years and addresses the critical need in the United States for more scientists and science teachers. Beginning in 1991, high school teachers have been included. Participants in the program perform a research project in a UTMB laboratory under the direction of a faculty mentor for 8 weeks during the summer as a temporary employee. Participants have the opportunity to interact with faculty, graduate students, post-docs, and others in the program. Through a series of brown bag seminars they learn about different research projects and a wide variety of health career opportunities. All participants present the results of their research experience in oral presentations (seminar series) and in the concluding public poster session. In addition, they present their results when they return to their high schools in the fall.

UTMB Undergraduate Research Symposium - The annual Undergraduate Research Symposium is sponsored by UTMB's Graduate School of Biomedical Sciences, and hosted by its Committee for Diversity in Graduate Education and Educational Outreach. This annual symposium provides students from around the country with the opportunity to discuss their research experiences, present their findings in a formal setting to fellow students, faculty and staff; and explore their interest in graduate education by touring the university and interacting with faculty, staff, and currently enrolled students. This two-day symposium provides an excellent opportunity for students to learn more about UTMB's many graduate and summer programs, application processes, assistantships and scholarships as well as the communities both on and off campus.

Galveston County Science and Engineering Fair - The Galveston County Science & Engineering Fair is an annual event that in which more than 200 middle and high school students explore the wonderful world of science. Sponsored by UTMB, Galveston College, and Texas A&M University at Galveston, the fair is held on these campuses on alternating years. Participating students learned to approach their science projects in much the same way as a detective trying to solve a mystery. After selecting a specific mystery (hypothesis) to solve, students creatively design methods to uncover clues to help resolve their specific hypotheses. Students present their results formally in poster presentations and faculty, graduate, medical students, and research personnel serve as judges. Dr. Clifford W. Houston, associate vice president for educational outreach, is one of three co-chairpersons for this annual event.

UTMB Pathfinders Program - Opportunities in health and biomedical science are growing - fueled by the rapid advances in technology. The challenge for those recruiting for such positions is to find the right people with the required skills. Additionally, there are many other careers that can be pursued that will allow an individual to be connected to science without directly entering into traditional careers in healthcare and research. UTMB recognizes this critical need to develop a future health career's workforce. The Pathfinders Program was designed to meet this need and provides pathways for high school students in Galveston's public and private schools to explore opportunities in health-related careers at UTMB. Through tours, presentations and field trips, the program provides access and exposure to the people and resources that make up a major health science center. Pathfinders also contributes to workforce development in Galveston and the surrounding communities. Typical activities include visits, presentations, and hands-on experiences at: the Marine Biomedical Institute, Shriner's Burns Hospital; School of Nursing (included state-of-the-art skills lab); School of Medicine (included gross anatomy lab); Occupational Therapy; Physical Therapy, and Clinical Laboratory Sciences.

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October 10, 2007

Retention Programs

Pre-matriculation Reinforcement and Enrichment Program - This program provides a smooth transition from the undergraduate curriculum to the rigorous and demanding expectations of the medical school curriculum. This six-week program gives a realistic preview of selected courses in the first-year medical school curriculum. These courses are taught by medical school faculty and the demands of the course, including the pace of the course and the examinations are identical to that of courses during the academic year. The program provides the opportunity to make the academic, psychological, emotional, and the physical adjustment necessary to adapt to the demands of the medical school curriculum

Linear Academic Progression Program (LAPP)
Comprehensive in its scope, the LAPP identifies potentially "at risk" students. It consists of the following components: 1) Academic Year Retention Program; 2) Early Academic Identification Warning System. The LAPP begins at the pre-matriculation level with minority students in the summer program. It provides continued academic monitoring and step-wise intervention until all requirements for graduation have been satisfactorily met. Over site, early identification, academic monitoring, and proactive intervention are necessary in order to effectuate a greater percentage of minority medical students successfully completing medical school in four or five years.

The Academic Year Retention Program consists of the following components:
i. The Peer Tutorial Program - Tutoring is offered in small groups of four students for all first- and second-year basic science courses. All minority and disadvantaged students are immediately assigned to tutors upon request or if they are experiencing academic difficulty.

ii. Learning Skills Assessment - Assessment for learning problems including reading disabilities, attention problems, impulsivity problems, and mood difficulties that interfere with concentration and retention are offered upon request or when a student displays difficulty in coursework.

iii. Academic Counseling - Underrepresented minority and students receive one-on-one and group academic assistance throughout the year. Students meet with the learning skills specialist for individualized counseling to develop study approaches or methods that best fit their learning style.

iv. Supplemental Instruction - Practice examinations with board type questions and Kaplan board review materials are made available to students to check out and use in preparing for the first and second year coursework.

Comprehensive Board Review Program - UTMB requires passage of the USMLE Step 1 for entry into the third year of medical school and passage of the both the USMLE Step 1 and 2 for graduation. The Office of Student Affairs offers a Comprehensive Board Review Program to assist students in preparing for these required national exams. This program consists of a number of components including review lectures, practice exams, study questions, mentorship, and tutoring. It is designed to aid all students in achieving their greatest potential.

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October 10, 2007

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON
Medical School & Dental Branch Outreach, Recruitment & Retention Programs

Medical School Recruitment Activities

- **Joint Admissions Medical Program.** The University of Texas Medical School at Houston continues to participate in the Joint Admission Medical Program designed to support and encourage highly qualified, economically disadvantaged students pursuing medical education. There are 12 students currently enrolled as first or second year medical students and 20 JAMP II summer program participants each summer.

- **Summer Research Program.** The Research Track Summer Internship Program provides students with hands-on laboratory research experience and acquaints them with opportunities available for post-baccalaureate education and/or employment in the field of biomedical research. During the summer of 2007, 49 undergraduates and 41 medical students participated.

- **Michael E. DeBakey High School for the Health Professions**. The Medical School faculty participates in this preceptorship program. In this program, high school students are given shadowing experiences throughout the year. The students write learning objectives for the semester with their preceptor, and are involved in researching various topics.

- **National Youth Leadership Forum in Medicine**. For the past 14 years, the Medical School has participated in this important program. High school students who are identified as high achievers in science areas are invited to participate in this program. In addition, scholarships are awarded so that students who are from disadvantages backgrounds may also participate. Four hundred students each summer stay for two weeks near the Texas Medical Center. They have keynote speakers on various medical and research topics, they have clinical experiences, and they participate in Problem Based Learning activities and laboratory activities. The Houston-Galveston site is one of ten across the nation.

- **College Campus Visitation/Presentations**. Medical School representatives pay direct visits to approximately about thirty college campuses per year to attend Graduate and Professional School Programs and to provide presentations to pre-dental organizations on campus. Especially helpful to the recruitment process are the visits to the historically minority serving institutions.

- **Medical School Preparation Workshops**. The Medical School provides three sessions targeting colleges with large underrepresented minority enrollment. The workshops are designed to assist in detailed areas of the application process.

- **Robert Wood Johnson Foundation Summer Medical and Dental Education Program.** The UTHSC at Houston Medical and Dental schools jointly conduct the SMDEP. The program is funded by a four-year, $1.2 million grant from the Robert Wood Johnson Foundation. The program is a six-week, in residence, academic enrichment program for rising sophomore and junior students at undergraduate institutions. The curriculum includes calculus, physics, organic

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Texas Medical & Dental Schools Application Service (TMDSAS)
October 10, 2007

chemistry, anatomy and physiology. Students additionally received train in study skills, communication skills, financial management and critical thinking. Selection criteria for program participation give preference to students from disadvantaged and underserved populations. The program serves eighty students each summer (60 premedical and 20 predental).

- **Student Organizations**. The University of Texas Medical School at Houston has several student organizations and activities which augment the Schools recruitment activities. These organizations develop and organize and accomplish activities such as Med School Familiarization Day for Hispanic high school students.

- **Student Ambassadors Organization**. Several subcommittees of the UTH's Student Ambassadors are assisting with recruitment efforts. These activities involve tours for visiting students, developing website and printed recruitment materials, videos and podcasts.

- **Anatomy Enrichment Program and Anatomy Enrichment Program Extreme!** In the spring of each year, scores of high schools participate in these on campus programs. The lessons are taught by medical students to small groups of twenty five high school students and involve a cadaver lesson, identification and inspection of various organs, and, in the case of AEP-Extreme, a CPR lesson in the Surgical and Clinical Skills Center, beginning in the spring of 2008.

- **Office Hours.** Office hours are provided on a regular basis each week. Individuals or small groups of students may come to the Office of Admissions without appointment for individual counseling regarding the application process.

- **Office of Institutional and Cultural Diversity**. This office provides individual counseling services to establish a working plan for students from various backgrounds who are in need of assistance in the application process for medical school. Resources include a detailed guide to services provided in the community or through the UTHSC. Grant support for this service is being sought which is provided on an individual basis currently.

- **Additional Miscellaneous Recruitment Efforts**. These include advising individual students, attending off campus Health Career Fairs at the elementary, high school and college levels, attending premedical organizations on Texas university campuses, hosting high school groups and college groups on campus for counseling sessions and tours, and presentations to the students from several UTHSC institutional summer research students about medical school.

  In calendar year 2006, recruitment activities included the following:
  Visits to Junior and Senior High Schools, including Career Fairs, reaching approximately 1,000 students
  28 visits to Colleges and College Career Fairs, reaching approximately 1,000 prospective students
  The Hispanic High School Convention, reaching approximately 325 students
  35 on-campus visits by approximately 642 college and high school student groups
  Approximately 100 individual counseling sessions
  Approximately 250 direct mailings (letters/brochures/information packets) to prospective students

Medical School Retention Activities

- **Pre-Entry Program.** Invited students have risk factors such as below average MCAT's, non-science majors, and significant time between undergraduate degree and medical school. Students are taught by regular faculty and given introductory versions of particularly challenging first-year courses as well as intensive instruction in time management, study techniques, test-taking strategies. Currently the resources will all for approximately 15 to 17% of the class to participate in this Program.

- **Learning specialist for individual consultation and testing**. The Office of Student Affairs has employed for the last three years a learning specialist who is available by appointment to consult with students about study techniques and to administer a full battery of diagnostic testing to determine their relative strengths and weaknesses in learning skills. The learning specialist advises students how to address their deficits and, if their deficits are severe, may recommend to the Office of Student Affairs that they receive extended testing time. The learning specialist is highly visible to students, participates in the Pre-Entry Program, introduces these services to all students at Orientation and the Freshman Retreat, and provides workshops on study techniques and time management for the entering class.

- **Peer tutoring program**. Any student needing assistance with a course may request a student tutor (second-year students tutor first-year students and fourth-year students tutor second-year students). There is no charge for this successful program, and it is widely used by the students in the first two years of medical school.

- **Alternate Pathway Program**. At any point before final exams in the fall or spring semesters a student may request to enter the Alternate Pathway Program. Entry into this plan is only permitted after counseling and approval of the deans in the Office of Student Affairs. In this pathway, the student completes all of the first-year coursework in two years. There are usually 7-15 students each year who take advantage of this option.

- **Master Advisory program**. All entering students are assigned to an advisory group headed by one or more faculty, assisted by three to four second-year students. The groups meet on appointed days three times during the fall semester and twice during the spring. An agenda for each meeting provides structure and allows reinforcement of the availability of support services. Faculty advisors also have access to their advisees' course averages and can give individual counseling to those who need it.

- **Course Director Faculty Assistance**. First-year course directors provide tutorial sessions, for individuals and for groups. Any student who has not performed well on the initial examinations is contacted by the course directors who offer assistance and apprise them of available resources.

- **Medical School Student Organizations** are also helpful in providing peer to peer and mentor to mentee advice and counseling, which may be helpful in retention efforts. A few of these include: active chapters of the Student National Medical Association for African-American students, the National Network of Latin American Medical Students, and similar programs for Asian students and other groups.

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Texas Medical & Dental Schools Application Service (TMDSAS)
October 10, 2007

- **USMLE Preparation.** Students are provided with several resources in order to successfully pass the USMLE on the first attempt. Individual counseling is provided for the at-risk student, and an individualized plan is made for these students. All students are provided with "Q Bank", a valuable preparation resource, and other materials are readily available. A local course is available as well. Individuals who need a more intense preparation may revise their course schedule, with the counseling and approval of Student Affairs deans, in order to have more time to prepare. These at-risk students may also be given permission to attend one of the month long, out of state preparation programs.

- **The Early Identification and Early Intervention Program** is a grant funded program to with three main objectives: to reduce the students who experience academic problems, improve the quality of education, reduce attrition and plan student career goals, and improve faculty advising. This extensive program is under the direction of the Office of Institutional & Cultural Diversity.

Dental Branch Recruitment Activities

- **Robert Wood Johnson Foundation Summer Medical and Dental Education Program.** The UTHSC at Houston Medical and Dental schools jointly conduct the SMDEP. The program is funded by a four-year, $1.2 million grant from the Robert Wood Johnson Foundation. The program is a six-week, in residence, academic enrichment program for rising sophomore and junior students at undergraduate institutions. The curriculum includes calculus, physics, organic chemistry, anatomy and physiology. Students additionally received train in study skills, communication skills, financial management and critical thinking. Selection criteria for program participation give preference to students from disadvantaged and underserved populations. The program serves eighty students each summer (60 premedical and 20 predental).

- **The University of Texas Dental Branch at Houston Hispanic Center of Excellence.** The Dental Branch received a $1.5 million grant from HRSA in recognition as a Hispanic Center of Excellence. Federal Funding was dropped after the first year of the grant as part of the "zero" budget for Title VII. The grant provided for mentoring, academic support, and other programs for students at our partner Hispanic Serving Institutions: UT Pan American, UT Brownsville, UT El Paso, Texas A&M International, Texas A&M Corpus Christi, and Texas A&M Kingsville. This past fiscal year, the HCOE funded Dental Admissions Test reviews for more than thirty students at the partner schools. The programs also supported currently enrolled Hispanic students and the faculty development of Hispanic faculty.

- **The University of Texas Dental Branch Summer Enrichment Program.** The SEP is a five week, in residence, academic and enrichment program. The Summer Enrichment Program of The University of Texas Dental Branch at Houston is designed to introduce college students to the dental school environment and curriculum and to prepare students for the application and interview process. The program includes a formal Dental Admissions Test review course. The selection criteria include giving preference to individuals from disadvantaged backgrounds.

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October 10, 2007

- **Dental Early Acceptance Program.** Through affiliation agreements with eight Texas universities (UT El Paso, UT Brownsville, UT Pan American, Texas A&M Kingsville, Texas A&M Corpus Christi, Texas A&M International, The University of Houston – Downtown, and Prairie View A&M), this program offers highly qualified students with an interest in dentistry, and who through personal experiences have demonstrated the ability to overcome adverse or disadvantaged circumstances, the opportunity to be considered for and to receive conditional early acceptance to UTDB.

- **Summer Student Research Program.** This program provides research training and practical experience in research under the guidance of a faculty mentor and is supported primarily by an NIH T-32 training grant.

- **Debakey High School for the Health Professions-Preceptorship Program**. The Dental Branch participates in a preceptorship program that is a part of the Houston ISD High School for the Health Professions.

- **College Campus Visitation/Presentations**. Dental Branch representatives pay direct visits to approximately 15-20 college campuses per year to attend Graduate and Professional School Programs and to provide presentations to pre-dental organizations on campus. Especially helpful to the recruitment process are the visits to the historically minority serving institutions.

Dental Branch Retention Programs

- **Dental Branch Tutorial Program**. Free tutorial assistance is provided to any student requiring additional assistance. The program is funded by the Dean's Office and administered through the Office of Student and Alumni Affairs.

- **Dental Branch Peer Mentor Program**. Incoming first year students are paired with a second year student to assist with the transitioning process from college to professional school.

- **Academic Advising.** All Dental Branch students have a faculty member who serves as their academic advisor. The advisors voluntarily agree to serve in this capacity. The advisor assists the student in the negotiation of the dental school curriculum.

Office of Institutional & Cultural Diversity

- **Targeted Early-Intervention and Retention of Underrepresented Minority Students**. Grant-funded program designed to identify students who are at risk for dropping out and, based on their risk factors, identify resources and student services for appropriate interventions in collaboration with student advisors.

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Texas Medical & Dental Schools Application Service (TMDSAS)
October 10, 2007

UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO
Outreach, Recruitment and Retention Programs

I. Outreach and Academic Enrichment Programs

A. High School Students:

- **Med Ed Programs in Laredo and Rio Grande Valley**: year round program designed to attract students into the health professions. Students are provided with academic enrichment such as critical skills development, SAT prep, essay writing tips, interview preparation, etc. Currently 700 students are enrolled in the Laredo program and 1300 in the Valley program.
- **Med Ed Spring Field Experience Program:** 50 students from Laredo and Lower Rio Grande Valley visit HSC for 3 days to gain understanding of careers in the health sciences.
- **On-campus visits for middle and high school students:** in 2005, 4,530 students visited the HSC campus to introduce them to the health professions. These visits involved walking tours of campus, an overview of the HSC professional programs, motivational stories, hands-on laboratory experiences, etc.
- **CATCH Academy**: a year long program of the School of AHS designed for high school students exploring careers in the health professions and their teachers. Annually the Academy serves 20 high school students and 4 teachers from the 38 county south Texas region.
- **Participation in local and South Texas Career Nights**: Student Services representatives visited 21 high schools career nights in San Antonio and South Texas in 2005 and spoke with more than 7500 students.
- **Annual Science Expo** organized to interest high school and middle school students from San Antonio and South Texas in the health professions. Funding for this program was through the South Texas Programs office. Annual attendance for Science Expo is 1,500 students.
- **Summer program with Northside ISD and other area high schools**: each summer approximately 35 students are recruited for hands-on work in faculty laboratories at the HSC. These students are mentored by Medical, Dental and Graduate school faculty. Approximately 50% of these are from underrepresented minority backgrounds.
- **Collaborative efforts between the HSC and Community Programs**: 150 students/participants in community programs such as Joven, Avance, Upward Bound and YMCA sponsored efforts establish contact with the HSC through visits and presentations intended to assist the “non-traditional” student gain skills necessary to become competitive applicants in health career programs.

B. Undergraduate Pipeline Programs

- **Summer Research Mentoring Program** jointly sponsored by the Graduate Schools of HSC and UTSA since 2005. 24 students with 54% from underrepresented minority backgrounds have been mentored each year. Funded by the UT System.
- **Biomedical Summer Undergraduate Research Experience** supported by the Graduate School and the Department of Biochemistry. Established in 2005, a total of 20 students each summer, with 20% from underrepresented minority backgrounds, who are majoring in math and physics are being provided summer research mentoring experiences in the biomedical sciences. Funded by National Institutes of Health

Prepared by:
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October 10, 2007

- **Pharmacology Summer Undergraduate Research Fellowship Program**: established in 1999. Funded by NIH grant. A total of 27 students with 35% from underrepresented backgrounds are provided with a research internship experience.
- **Molecular Medicine Summer Undergraduate Research Fellowship Program**: 65 students with 31% from underrepresented minority backgrounds. Funded by a training grant from the Department of Defense.
- **College Career nights**: 53 visits to college career nights in 2005; 2008 students
- **Medical Hispanic Center of Excellence Summer MCAT Prep**: familiarizes pre-medical students with the MCAT and the admissions process. Offers on-line and on site classes.
- **On-campus visits for collegiate students:** in 2005, 431 pre-professional students visited the HSC campus to expand their understanding of the health professions. These visits involved walking tours of campus, an overview of the HSC professional programs, panel discussions with current HSC students, meetings with the Associate Deans of Admissions from each of the HSC schools, discussions regarding what constitutes a competitive application, motivational stories, hands-on laboratory experiences, etc.

II. Mentoring Programs for High School Teachers

- **MS Program in Physiology for K-12 Teachers**. Thesis driven program for science teachers who go back to their classrooms with skills and knowledge up grades which dramatically improve science education for their students. 14 teachers have successfully completed the coursework. 36% minority background
- **MS Program in Microbiology and Immunology**: A total of 31 K-12 teachers from San Antonio and South Texas school districts have participated. 16% are underrepresented minorities; The majority of the 31 come from school districts where the student bodies are 75%-95% minorities.
- **High School to Pro School**: a program sponsored by the Med Ed Program whereby teachers from Laredo and the Rio Grande Valley are brought to the HSC to learn about the professional programs offered at the HSC, to discuss the opportunities in the biomedical and health care industries, to discern what constitutes a competitive application for health career programs, and to organize a plan for distributing the knowledge they gain over the experience to students in their hometowns.
- **NIH grant supporting the Positively Aging** program whereby 104 teachers consultants (2003-2006), representing 16 schools and 10 school districts in and around Bexar County obtain knowledge and skills specific to the State of Texas and National Standards for math and science curricular objectives. 39% are underrepresented minorities; 36% non Hispanic and 24% unknown (individuals not reporting ethnicity). The schools where these teachers come from are 75% Hispanic and 3% African American.

III. Early Acceptance Programs to Medical and Dental Schools

- **Joint Admission Medical Program (JAMP):** a 4+4 pipeline to medical school program for economically disadvantaged students from 31 public undergraduate universities. Established in 2001, 7 students currently in medical school; 52 others in pipeline with 7 other medical schools; of the 38 students currently in the program, 31 are Mexican American.
- **Facilitated Admissions Program for South Texas Scholars:** Three 4+4 programs for students at St. Mary's University, the University of Texas at Pan American, and Texas A&M International University; 13 students in Medical School; 32 others in pipeline. Participants include 40 Hispanics students and 2 African American students.

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- **Dental Early Admissions Program (DEAP)**: 3+4 program with 19 undergraduate schools including, St. Mary's University, Texas A&M International, UTSA, UT Brownsville, Texas State University, UT Pan American. Since its establishment in 1990, more than 250 students have enrolled. Currently 32 DEAP students are enrolled in the HSC Dental School, 65 have graduated from the Dental School and more than 60 are currently in the program and enrolled in their undergraduate institutions. Many of the 19 institutions participating are Hispanic-serving and/or have high underrepresented minority enrollments.

IV. Programs Designed to help HSC students succeed

- **Office of Academic Enhancement, School of Medicine.**
  - **Pre-matriculation program**: An overview of the first year's medical school curriculum is provided and enhancement of study skills. All classes taught by second year medical students.
  - **Tutoring:** Tutorial services are provided to first and second year medical students in order to reduce the percentage of dismissals for academic reasons.
  - **USMLE Step 1 Prep Program:** All second year students have an opportunity to participate in a 24 week long program designed to prepare students for successful completion of the USMLE Step 1 examination.
  - **Fourth Year Tutoring Elective:** The Tutoring Elective consists of activities that will provide the student the opportunity to participate in the Office of Academic Enhancement Tutoring Program as tutors. Each tutor will receive training, tutor over an entire academic year, and participate in online activities.
  - **The MD with Distinction in Research Program:** An opportunity to spend part of their medical school career doing sustained work in basic, clinical, translational or social sciences. We expect that this program will be very helpful in helping students shape their career goals and building an academic track record that will be viewed favorably by residency selection committees.
  - **CV and Personal Statement Preparation:** This service is available to all fourth year students as they prepare residency applications. Focus is to ensure medical students are preparing the best possible application for residency programs.
  - **Mentor Program:** Promotes connections between medical students early in their educational studies, with second and/or fourth year medical students. Through informal meetings with their mentors, students can learn about didactic and clinical experiences from students who have successfully completed components of the residency.
  - **Student Enhancement Programs:** Information is shared with students which covers test taking skills, time management strategies and effective study skills.
- **NHMA Medical School Mentorship Program:** this program matches Hispanic medical students with faculty and community physicians who want to be mentors.
- **Student Organizations:**
  - UT Medical School Student National Medical Association: focused on the needs and concerns of medical students of color; is dedicated to both ensuring culturally sensitive medical education and services as well as increasing the number of African Americans, Latinos and other students of color entering and completing medical school
  - **National Network of Latin American Medical Students**: a support and advocacy organization for Latino medical students
  - **Mary Mahoney Student Nursing organization**: an organization focused on the needs and concerns of nursing students who are African American

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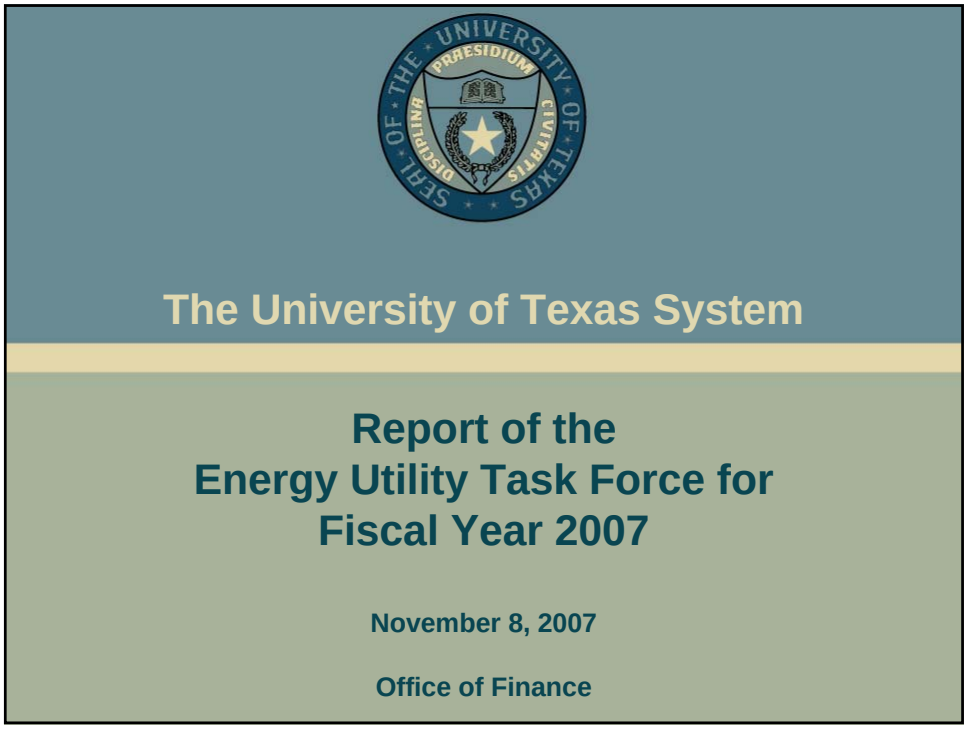
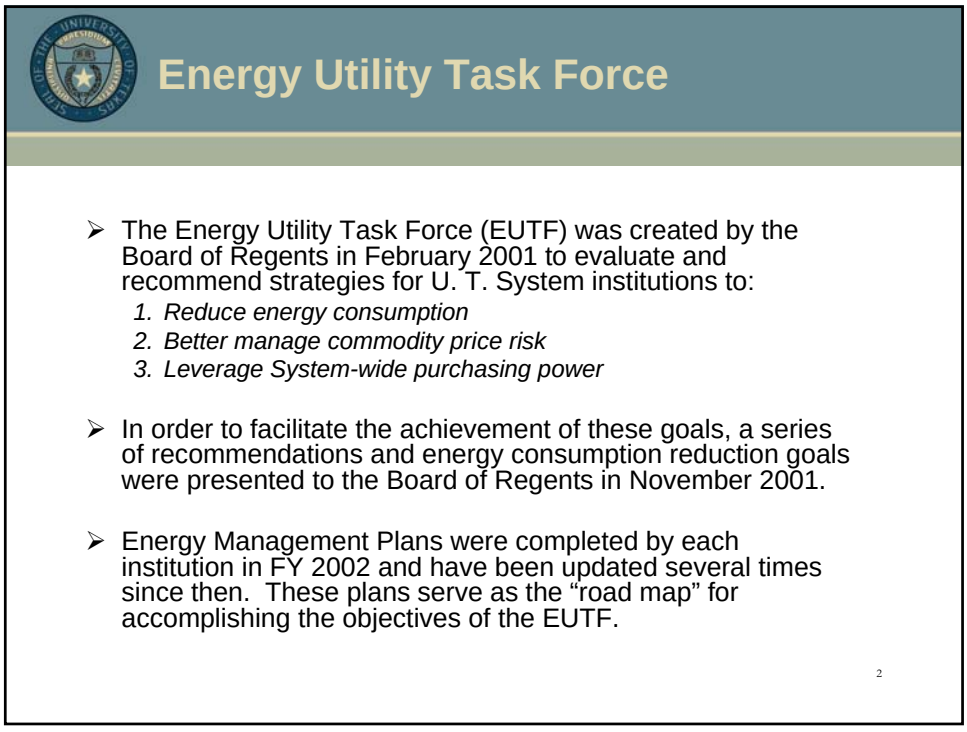
- **Juntos Podemos**, a HSC Nursing School mentoring program for disadvantages and/or underrepresented students. Initiated in 2000 with a THECB grant, the program enrolled 90 Hispanic students. Students serve as mentors and receive support to enhance their success in the nursing program. Currently the program is funded by HRSA. Since the fall of 2002, 1053 students have enrolled in the program either as mentors or protégés
- **Medical Hispanic Center of Excellence**:
  - **Pre-matriculation program**, whereby an overview of the first year's medical school curriculum is provided and enhancement of study skills and tutoring is provided.
  - **Medical Student Summer Research Program**: introduces and involves rising sophomore Hispanic medical students enrolled at the HSC to research related to Hispanic healthcare delivery, education and diseases prevalent in this population.
  - **Tutoring:** tutorial services are provided to first and second year medical students in order to reduce the percentage of dismissals for academic reasons

Prepared by:
Texas Medical & Dental Schools Application Service (TMDSAS)
October 10, 2007

4. U. T. System: Fiscal Year 2007 Energy Utility Task Force Report





FY 2007 EUTF Headlines

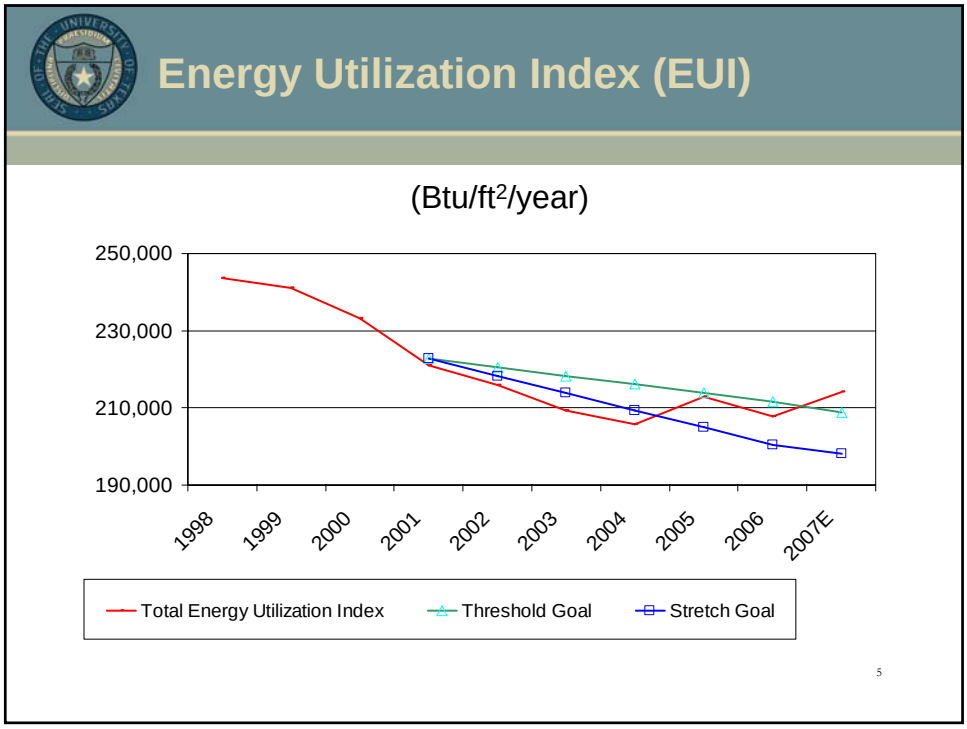
- A 5% - 10% reduction in System-wide energy use per square foot was targeted by the EUTF for FY 2006 and a 10% - 15% reduction was targeted for FY 2011. The current FY 2007 estimate shows a 3.6% reduction from baseline levels.
- The cumulative reduction in energy consumption per square foot since 2001 has saved the U. T. System $60.4 million.
- While energy consumption has declined on a per square foot basis since 2001, the cost of energy has increased from $2.61 per square foot in FY 2001 to $3.20 per square foot in FY 2007.

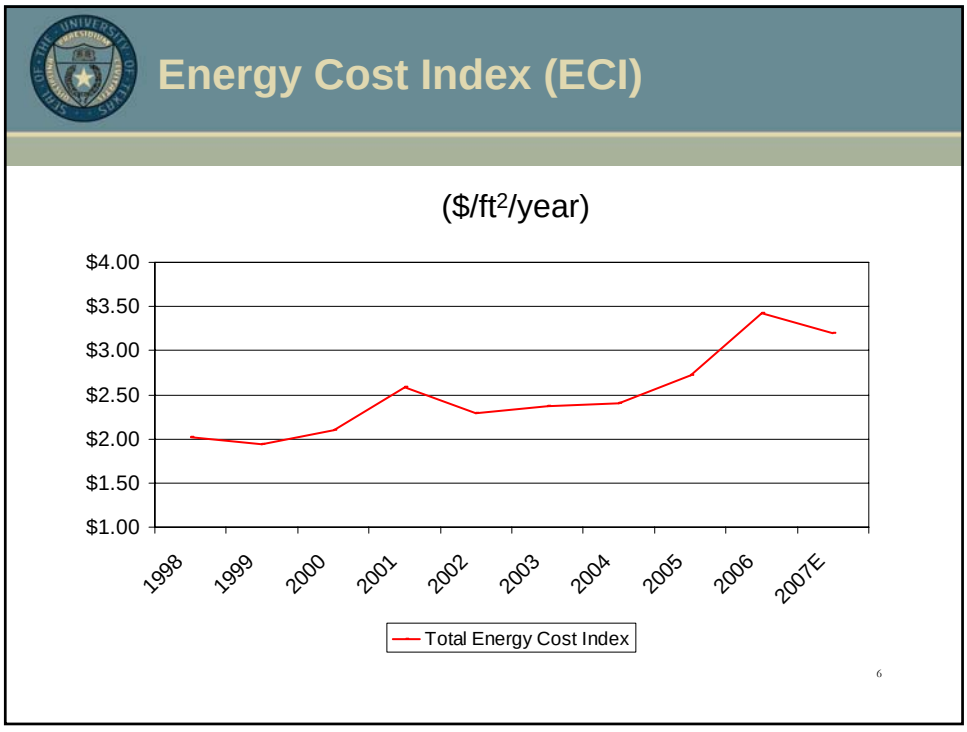
3

Governor's Executive Order RP-49

- On October 27, 2005, the Governor's Office issued Executive Order RP-49 requiring each state agency to develop a plan for conserving energy and to set a percentage goal for reducing its usage of energy.
- In response to RP-49, each U. T. System institution updated its existing Energy Management Plan, containing specific action items intended to reduce energy consumption.
- RP-49 requires quarterly reporting. The U. T. System reports are available online in the Publications section of the U. T. System website under "Reports to the State of Texas."
- The quarterly reports detail literally hundreds of energy savings activities that are ongoing at U. T. System institutions.

4


Energy Utilization Index (EUI)
(Btu/ft2/year)
250,000
230,000
210,000
190,000
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007E
Total Energy Utilization Index
Threshold Goal
Stretch Goal
5


Energy Cost Index (ECI)
($/ft2/year)
$4.00
$3.50
$3.00
$2.50
$2.00
$1.50
$1.00
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007E
Total Energy Cost Index
6

Why is Energy Use Not Declining?

A few possibilities:

1. The mix of space has changed dramatically in recent years.
2. Much of the "low-hanging fruit" has been picked.
3. The momentum from the original EUTF effort has waned.

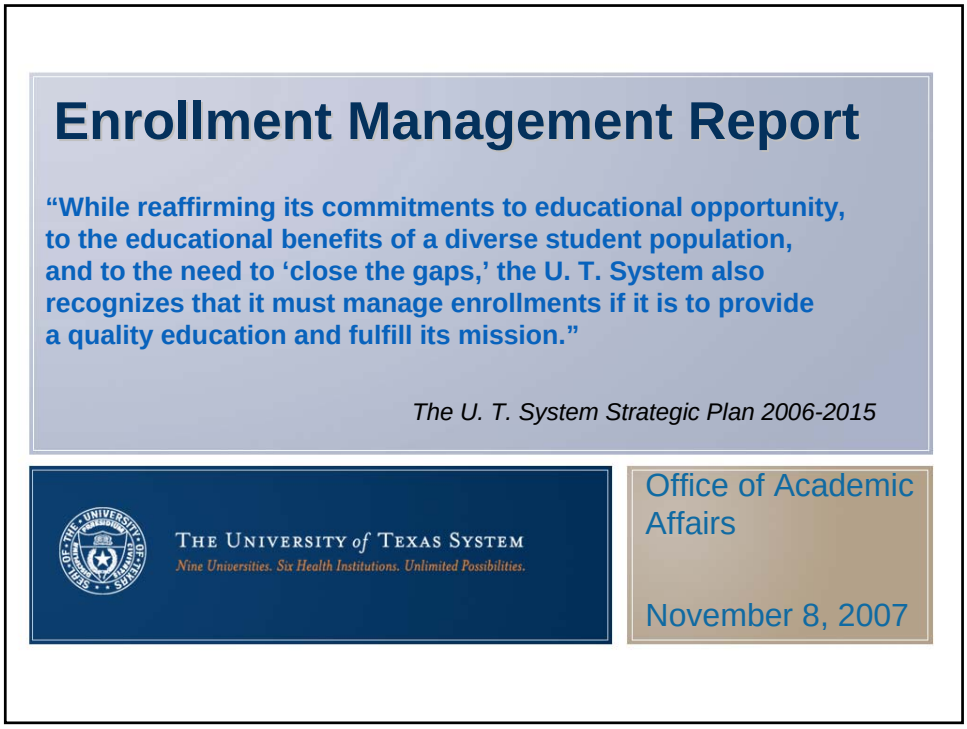
7

U. T. System Energy Consumption and Costs

Fiscal Year	Electricity Usage (Kwh)	Natural Gas Usage (Mcf)	Electricity Cost ($/Kwh)	Natural Gas Cost ($/Mcf)	Total Energy Cost	Gross Square Footage	Total EUI (Btu/ ft²/ yr.)	Total ECI ($/ ft²/ yr.)
1998	1,003,307,037	7,146,175	$0.045	$2.72	$101,093,039	50,098,343	243,711	$2.02
1999	1,006,136,057	6,972,357	$0.044	$2.48	$ 99,614,128	51,322,666	241,113	$1.94
2000	1,059,087,750	7,057,246	$0.046	$3.40	$114,201,844	54,285,861	233,140	$2.10
2001	1,054,912,766	7,173,448	$0.057	$5.95	$149,007,978	57,647,676	221,082	$2.58
2002	1,084,142,327	7,161,616	$0.056	$3.82	$136,304,604	59,518,675	215,916	$2.29
2003	1,111,095,048	6,938,533	$0.056	$4.97	$144,915,729	61,027,968	209,227	$2.37
2004	1,164,660,799	7,544,840	$0.056	$5.03	$158,714,505	66,129,878	205,707	$2.40
2005	1,282,641,580	7,495,421	$0.060	$6.07	$186,414,656	68,638,056	212,821	$2.72
2006	1,377,078,325	7,317,172	$0.070	$10.24	$247,385,549	72,332,196	207,730	$3.42
2007E	1,422,626207	7,892,770	$0.073	$7.62	$236,368,866	73,865,297	214,189	$3.20

8

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates



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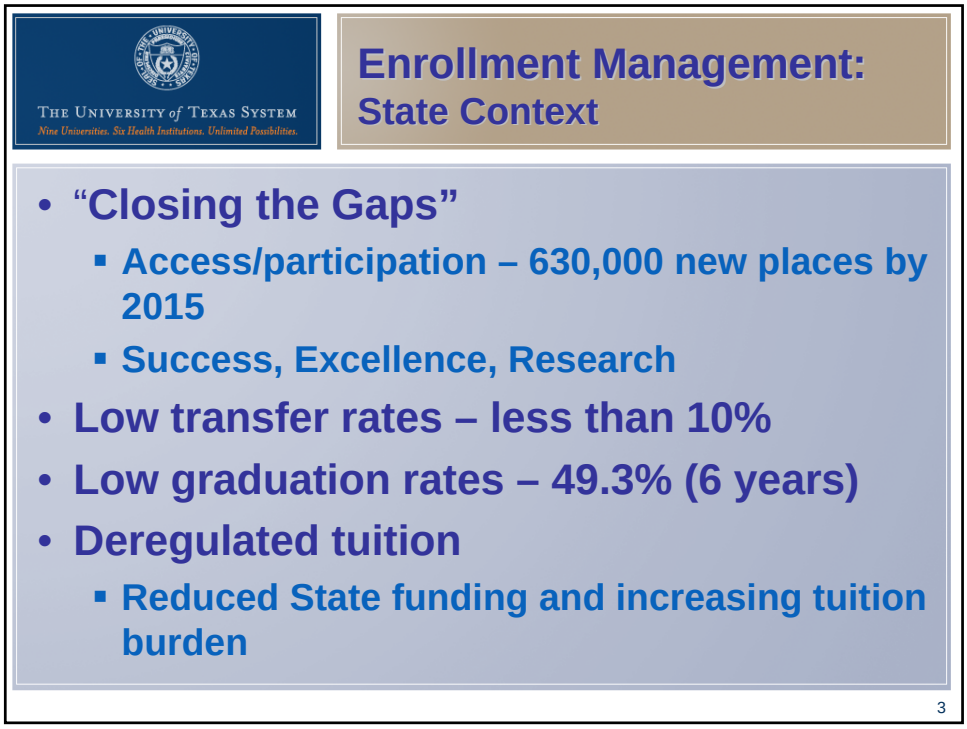

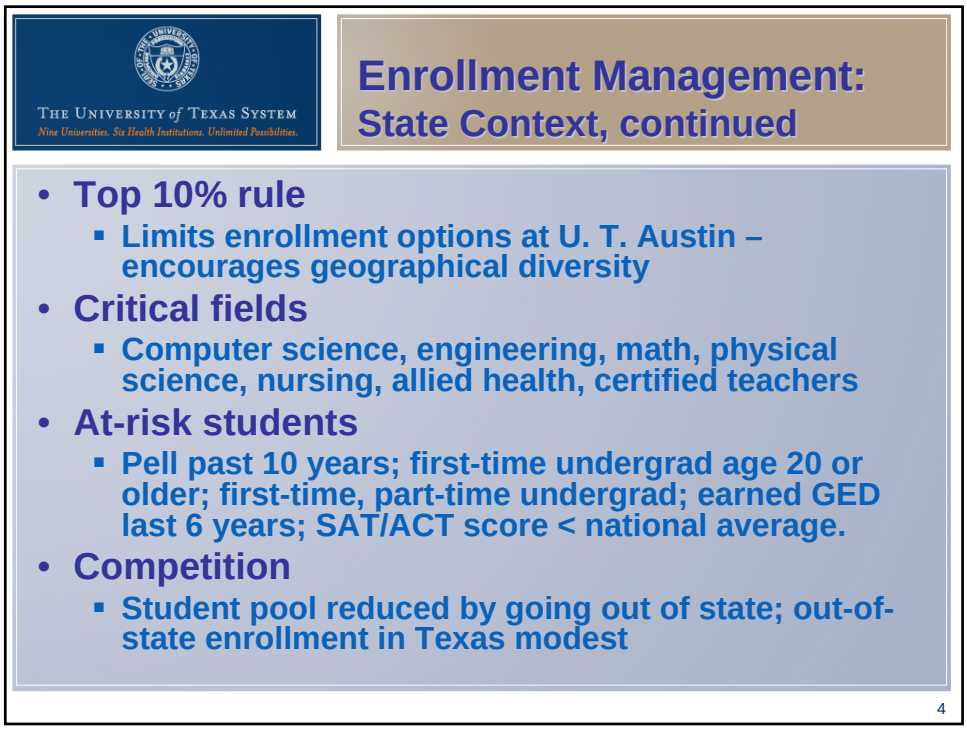

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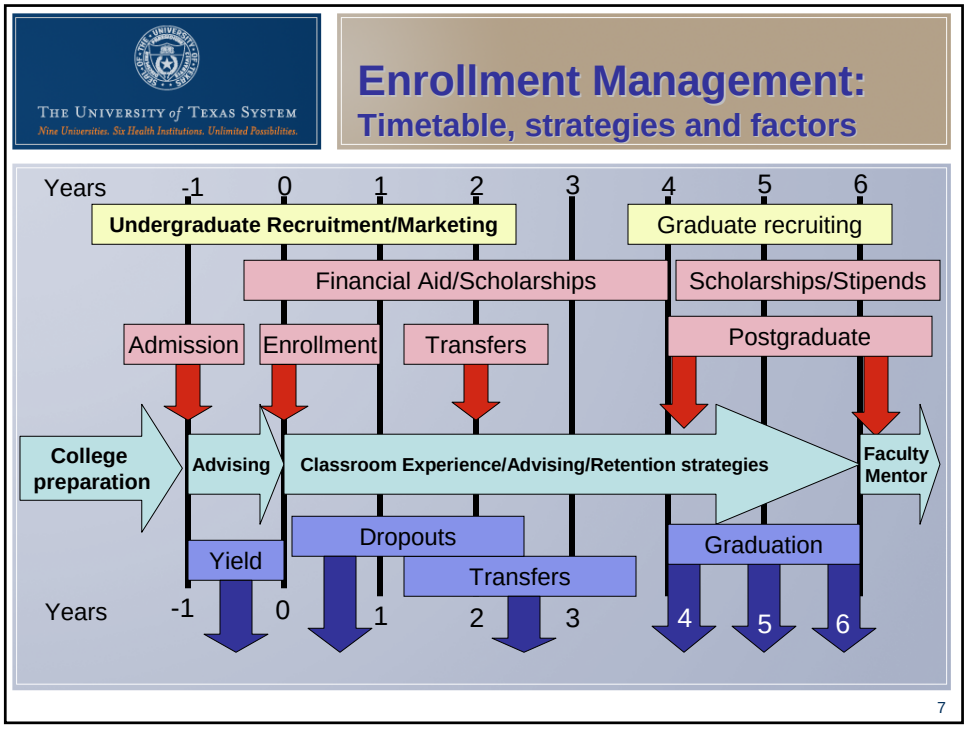

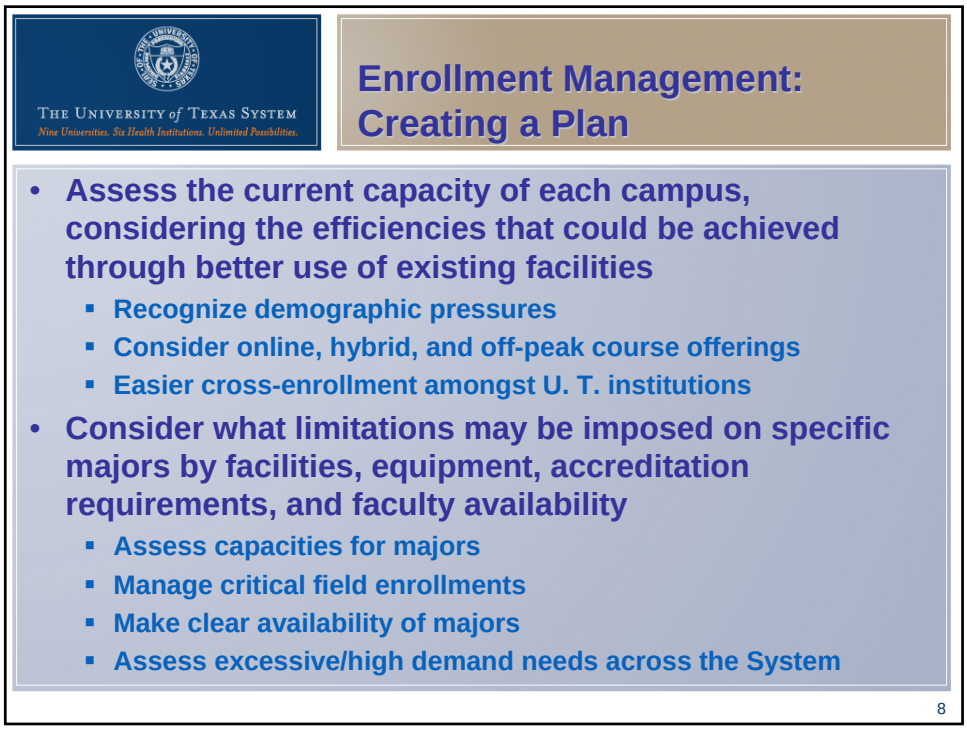

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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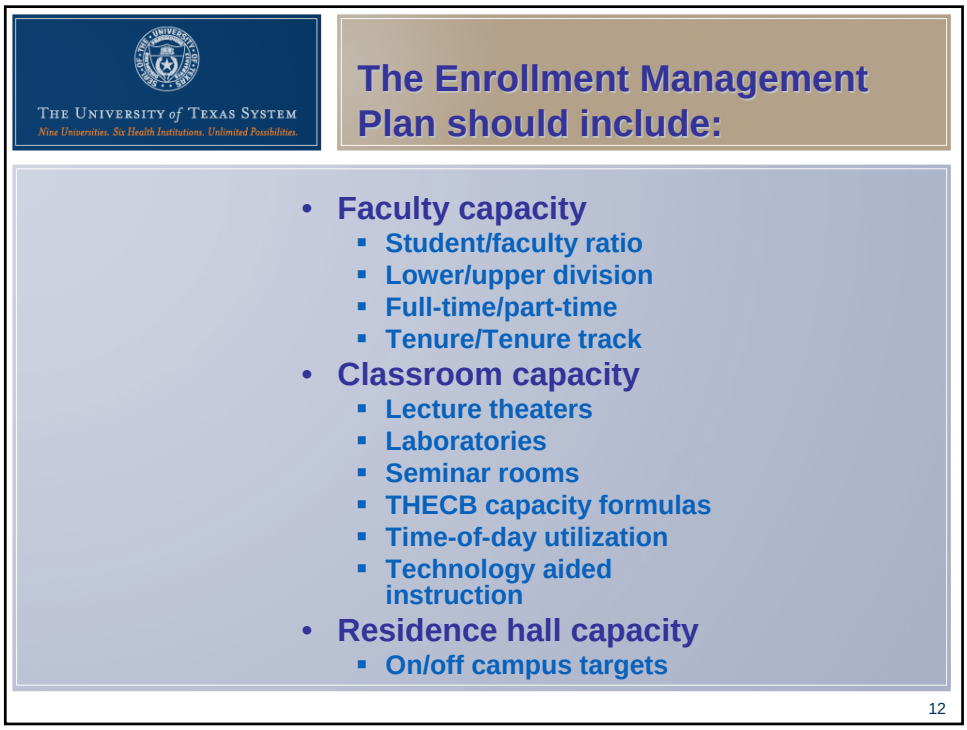

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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The Enrollment Management Plan should include:

- Ancillary facilities
  - Student Center
  - Recreation
  - Parking
  - Transportation
  - Medical
- Revenues and pricing
  - Formula funding
    - Rates/Weights
  - Indirect cost returns (IDC)
  - Tuition and fee rates
    - Standard/Differential
  - Tuition discounting
  - Tuition incentives
    - Flat rate/Guaranteed

13

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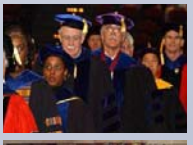
Enrollment Management: Resources for excellence in student educational experience

Finances

Faculty



Balancing acts !

Facilities

14

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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Enrollment Management: Status of Institutional Plans

	Current Status	Completion Target
U. T. Arlington	In Process	January 2008
U. T. Austin	Original Plan	Completed 2001
	Task Force	Completed 2003
	Review of Progress	December 2008
U. T. Brownsville	In Process	January 2008
U. T. Dallas	In Process[1]	January 2008

[1] U.T. Dallas has created a new position, Vice President for Enrollment Management. Search is underway.

15

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Enrollment Management: Status of Institutional Plans

	Current Status	Completion Target
U. T. El Paso	In Process[2]	January 2008
U. T. Pan American	In Process	January 2008
U. T. Permian Basin	Original Plan	Completed 2006
	Review of Plan in Process	January 2008
U. T. San Antonio	In Process	January 2008
U. T. Tyler	In Process	January 2008

[2] El Paso has created a new position, Associate Vice Provost for Enrollment Management. Position was filled September 2007.

16

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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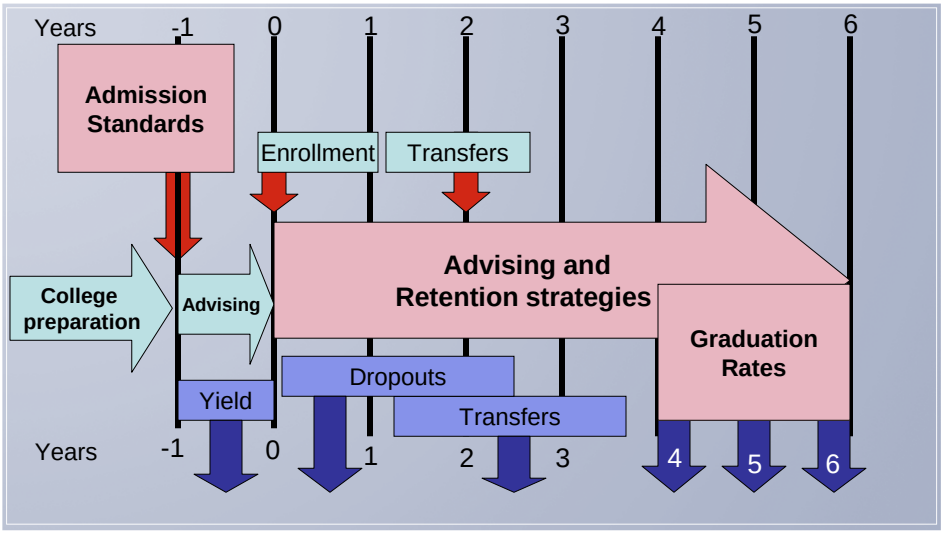
Enrollment Management: Strategic Factors



17

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Enrollment Management: Fall 2008 Freshman Admissions Requirements

	High School Rank	SAT Score Math & Verbal (max: 1600)	ACT Score (max: 36)	Freshman Class Profile (2005)	Comments
UTA	Top Quarter	Guaranteed Admission		SAT 1066 ACT 22	Increased standards - 2004
	Second Quarter	1050	22		
	Third Quarter	1150	25		
	Fourth Quarter	Individual Review			
UT Austin	Top 10%	Guaranteed Admission		SAT 1242 ACT 26	High admission standards
	Non-top 10%	Holistic Review			
UTB	Open Door Admission Policy			SAT n/a ACT n/a	February Docket – More rigorous satisfactory academic progress policy

18

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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Enrollment Management:
Fall 2008 Freshman Admissions Requirements, cont.

UTD	Top 10%	Guaranteed Admission		SAT 1245 ACT 26	High admission standards
	Non-top 10%	Holistic Review			
UTEP	Top 50%	Guaranteed Admission		SAT 920 ACT 18	February Docket – revised admission standards
	Bottom 50%	920	20		
UTPA	Top 10%	Guaranteed Admission		SAT 949 ACT 19	Increased standards - 2005
	Non-top 10%	760	16		
	Non-top 10% (Fall 2009)	810	17		
	Non-top 10% (Fall 2011)	850	18		

19

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Enrollment Management:
Fall 2008 Freshman Admissions Requirements, cont.

UTPB	Top Quarter	Guaranteed Admission		SAT 988 ACT 21	February Docket – revised admission standards
	Second Quarter	830	18		
	Third Quarter	920	19		
	Fourth Quarter	1100	24		
UTSA	Top Quarter	Guaranteed Admission		SAT 996 ACT 20	Increased standards – 2008
	Second Quarter	920	19		
	Third Quarter	970	20		
	Fourth Quarter	1020	21		

20

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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Enrollment Management:
Fall 2008 Freshman Admissions Requirements, cont.

U. T. Tyler considers three sections of the SAT (math, verbal, and writing) to determine the total SAT score; the maximum possible score is 2400.

UTT	Top 10%	Guaranteed Admission		SAT 1079 ACT 23	SAT score reflects verbal and math score only for 2005
	Top Quarter	1410	20		
	Second Quarter	1500	21		
	Third Quarter	1530	22		
	Fourth Quarter	1590	23		

Notes:

1. Except for U. T. Tyler, U. T. System academic institutions require submission of the new SAT writing score, but do not include it in the minimum SAT score requirement for admission.
2. In 2005, college bound seniors scored the following on the SAT; Nationwide test takers – 1028 and Texas test takers – 995.
3. In Fall 2008, all institutions by State law will need to require the high school recommended or advanced curriculum (college preparatory courses).

Source: The University of Texas System academic institution Web sites

21

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Enrollment Management:
U. T. Brownsville
Satisfactory Academic Progress (SAP)

- **The problem – Spring 2007**
  - 17% of non-dual enrolled students had GPA of less than 2.0
  - 24% of non-dual enrolled students completed less than 70% of hours attempted
  - Students with <2.0 were allowed to continue for 3 to 4 semesters
- **The solution**
  - A simple 2.0 minimum GPA for satisfactory academic progress
  - A 70% completion rate for hours attempted
  - Students not in good standing put on probation
  - Need a cumulative 2.0 GPA and 70% completion to return to good standing
  - If unsuccessful, then put on suspension
  - SAP widely publicized
  - Financial effects – monitored and to be mitigated

22

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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Enrollment Management: Retention Rates

First-Year Retention Rates for First-Time, Full-Time Degree-Seeking Undergraduates Academic Institutions

Enrolled Fall	2000	2001	2002	2003	2004	2005
U. T. Arlington	68.0%	65.6%	66.4%	60.4%	68.9%	64.1%
U. T. Austin	91.0	90.5	91.4	92.7	92.7	92.1
U. T. Dallas	78.0	79.4	83.8	80.2	82.5	79.9
U. T. El Paso	64.6	64.3	68.7	56.9	67.9	67.3
U. T. Pan American	61.0	64.4	66.3	66.0	67.3	72.1
U. T. Permian Basin	55.6	61.2	65.6	67.8	57.3	57.0
U. T. San Antonio	62.8	60.0	58.6	51.9	58.0	64.5
U. T. Tyler	60.0	60.5	54.3	56.0	60.4	58.7

23

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Enrollment Management:
New strategies to increase retention and graduation rates

U. T. Arlington
- Freshman Retention Strategies
- Policy Revisions
- Modified Tuition Structure

U. T. Austin
- Student Cohorts
- Transfer Policy
- Flat Rate Tuition Structure

U. T. Brownsville
- The Early Alert Program
- Mentoring Programs
- Flat Rate Tuition Structure
- College Survival Series
- Scholarships
- On Campus Employment

24

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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Enrollment Management:
New strategies to increase retention and graduation rates, continued

U. T. San Antonio
- Required Advising and Degree Plans
- Task Force for Student Success and Graduation

U. T. Tyler
- Community College Collaborations
- Learning Communities
- Supplemental Instruction
- Developing a Campus Community

27

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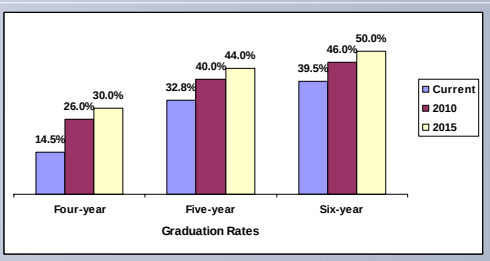
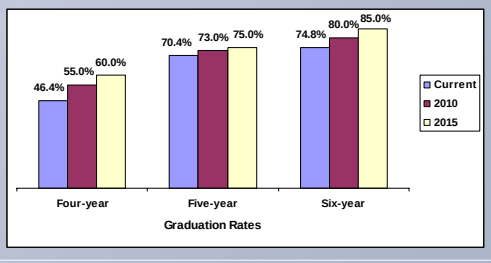
Enrollment Management:
Graduation rates……where are we headed ?

UT Arlington



UT Austin



28

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

THE UNIVERSITY of TEXAS SYSTEM
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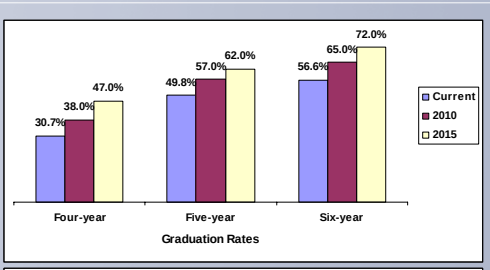
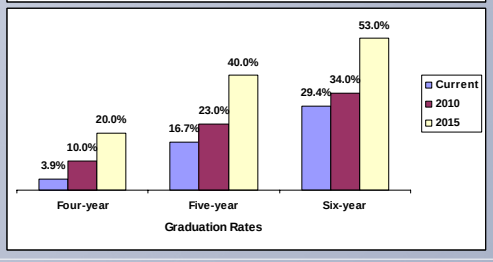
Enrollment Management:
Graduation rates……where are we headed ?

U. T. Dallas



U. T. El Paso



29

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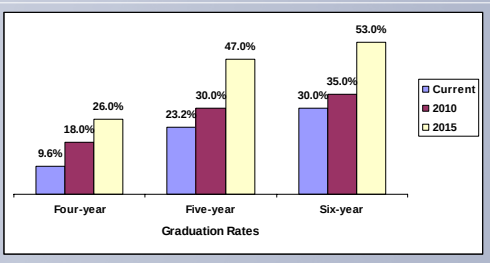
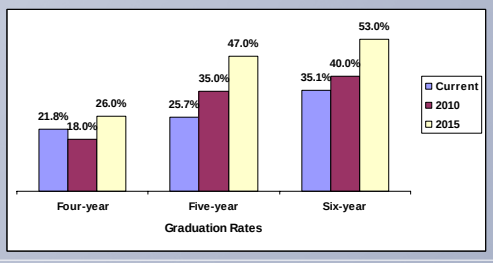
Enrollment Management:
Graduation rates ……where are we headed ?

UT Pan American



UT Permian Basin



30

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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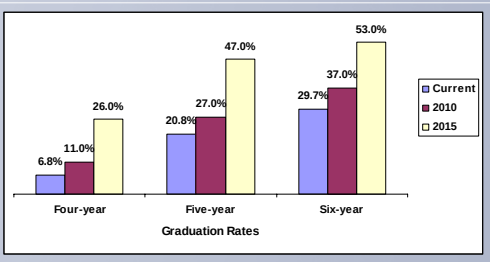
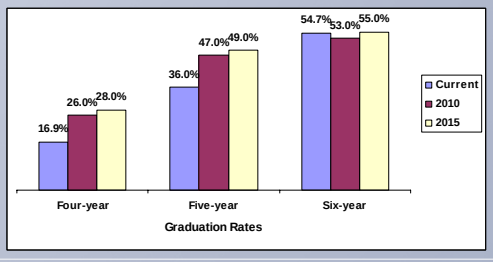
Enrollment Management:
Graduation rates……where are we headed?

UT San Antonio



UT Tyler



31

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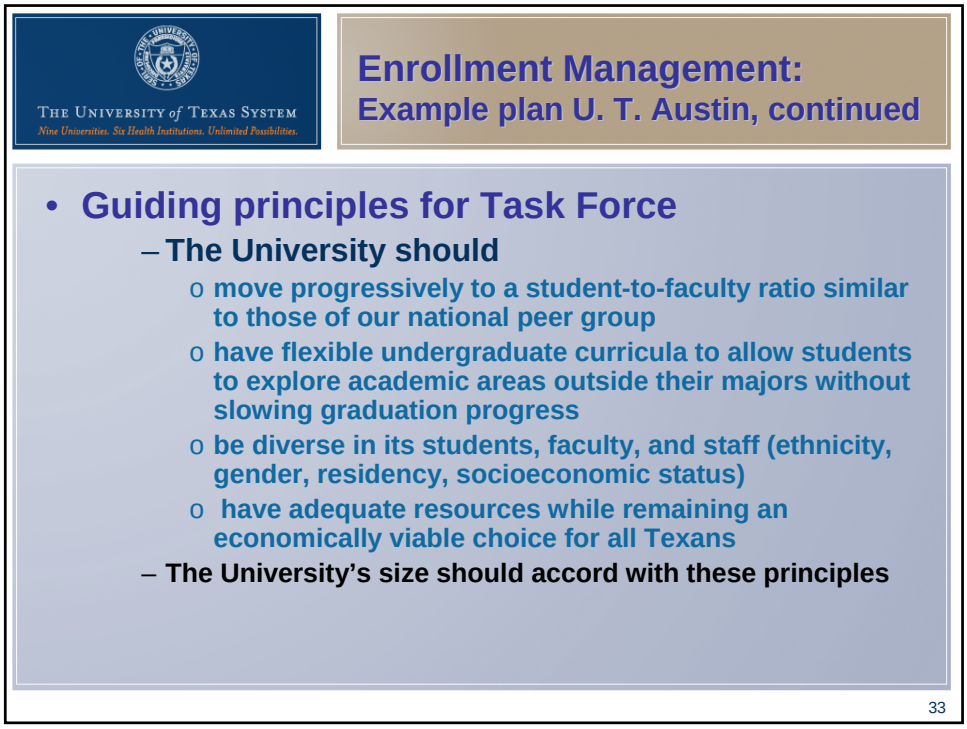
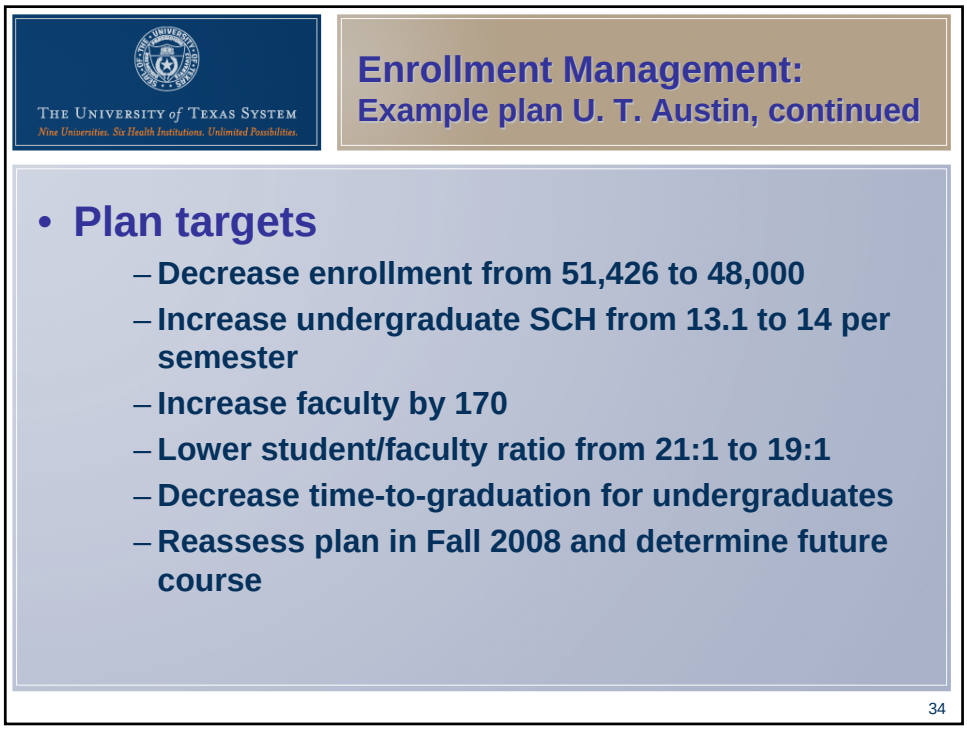
Enrollment Management:
Example plan U. T. Austin (2003)

- **Guiding principles for Task Force**
  - **The University should**
    - **be internationally renowned for its teaching, research, and service**
    - **provide a graduate and undergraduate education second to none**
    - **strive to carry out its central educational mission on a contiguous campus**
    - **improve the percentage of undergraduates who complete their degrees and shorten time-to-graduation**

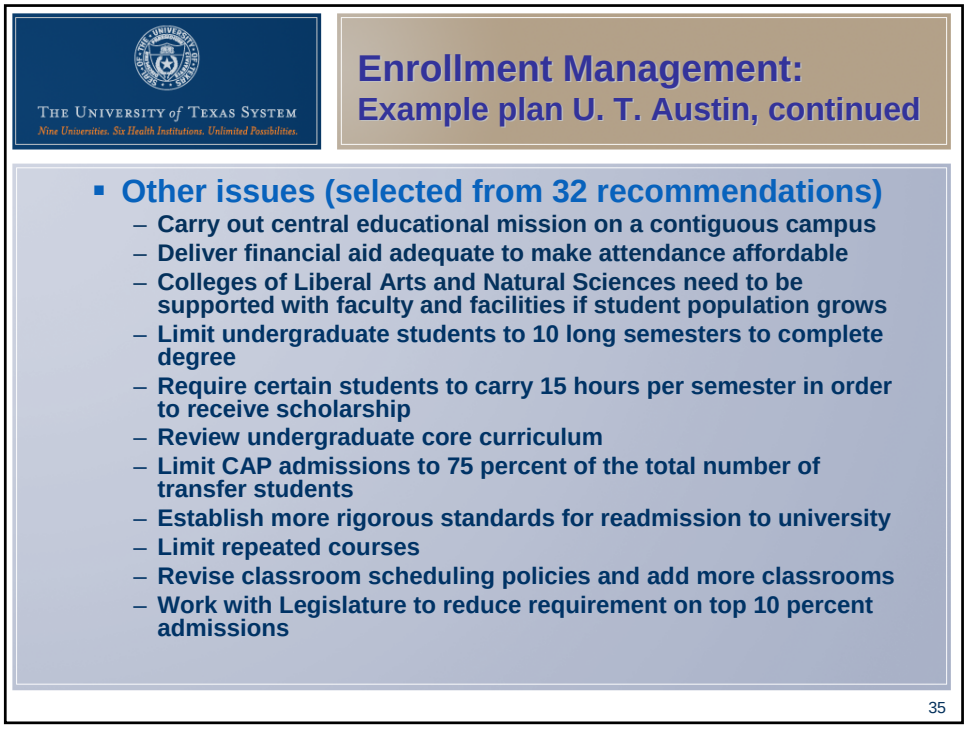
32

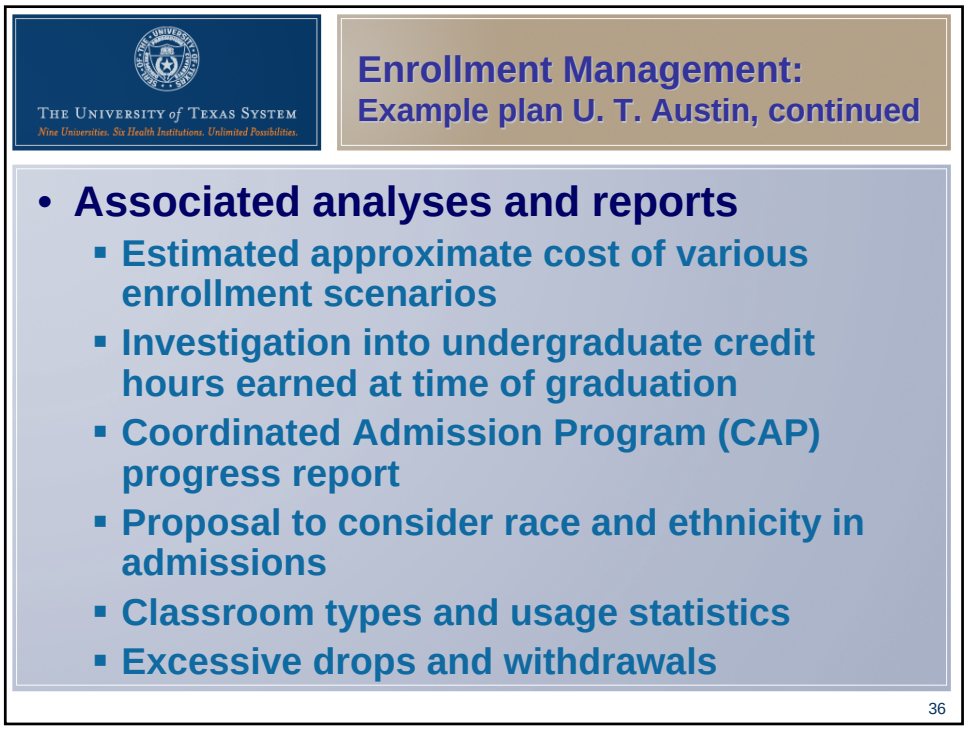
10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)





10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)





10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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Enrollment Management:
Example plan U. T. Austin, continued

- **Estimated approximate cost of enrollment scenarios**
  - **Hypotheses and assumptions**
    - Changes in size affected by enrollment policy
    - Average undergraduate SCH increased to 14
    - Student/faculty ratio to 19
    - Costs predicted for 5/10 years @ 3% increase per year
    - Formula funding per SCH at current level
  - **Five different scenarios calculated**
    - 48,000 students
    - 49,000 students
    - 50,000 students
    - 51,438 students
    - 56,000 students

37

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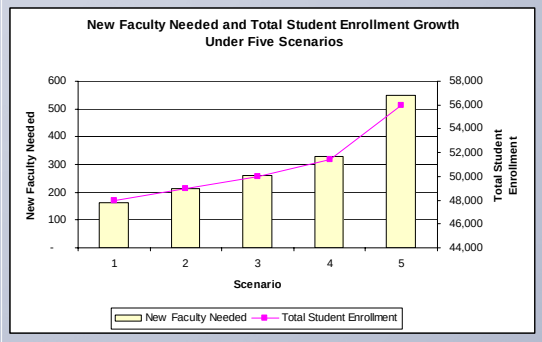
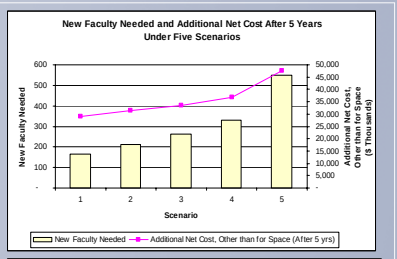
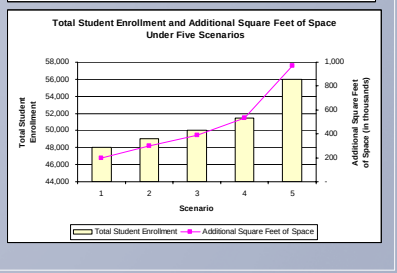
Enrollment Management:
Example plan U. T. Austin, continued

- **Estimated approximate cost of enrollment scenarios**

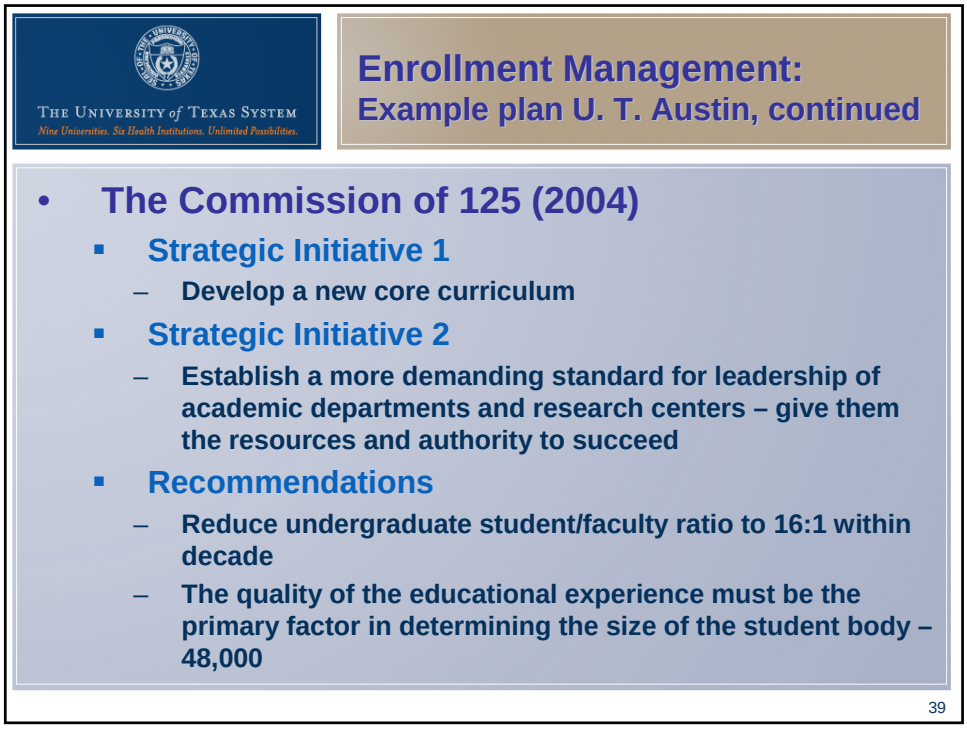


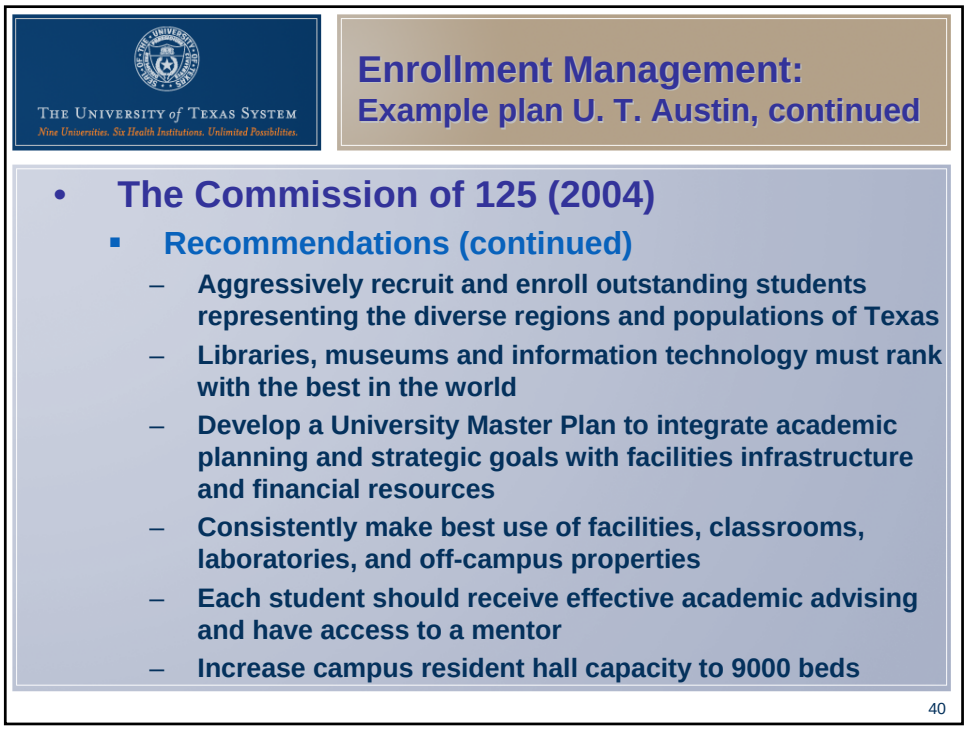




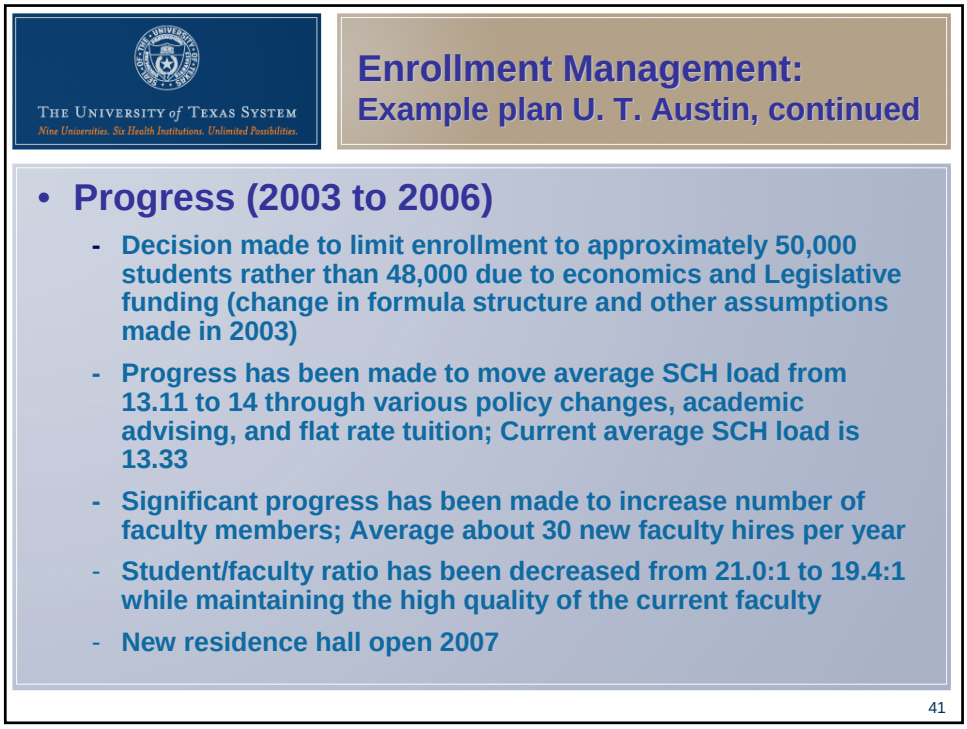
38

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)





10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)



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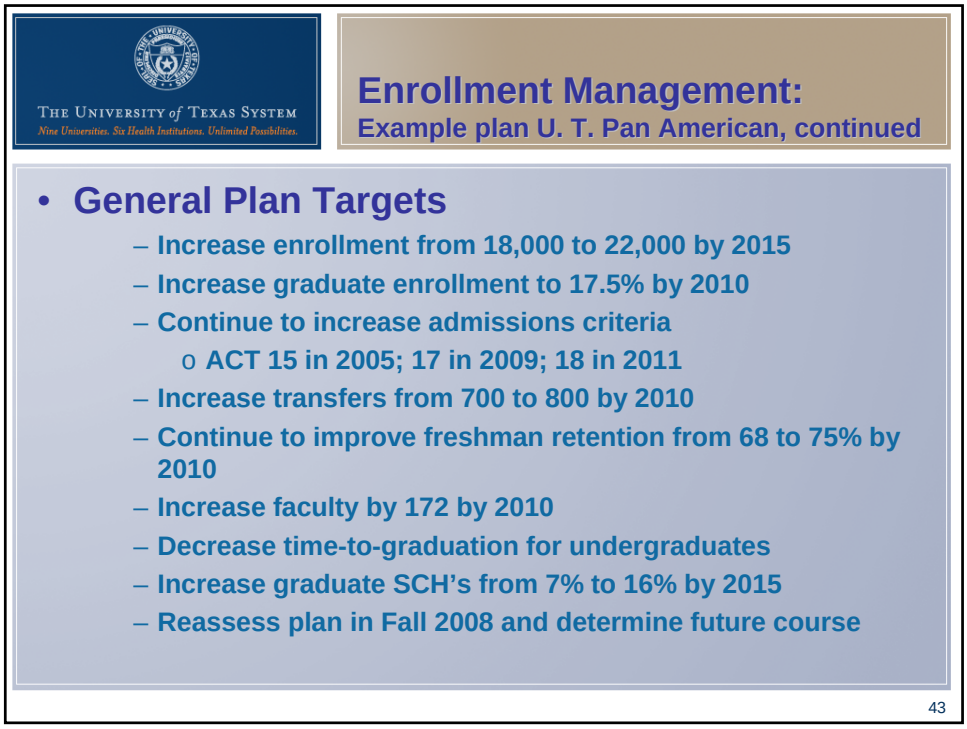

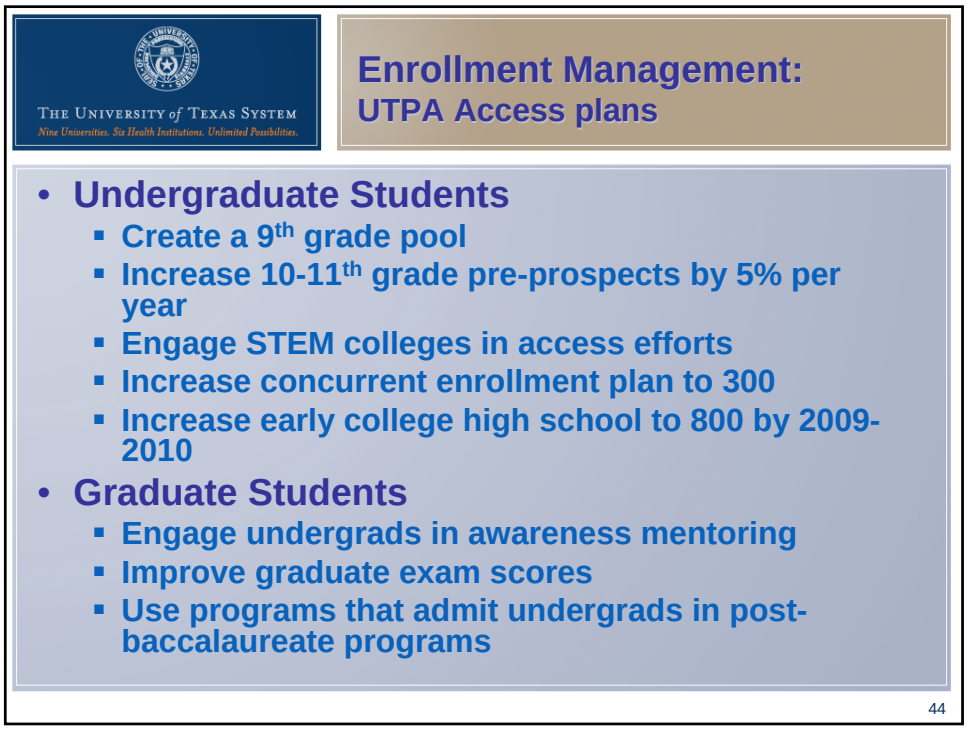

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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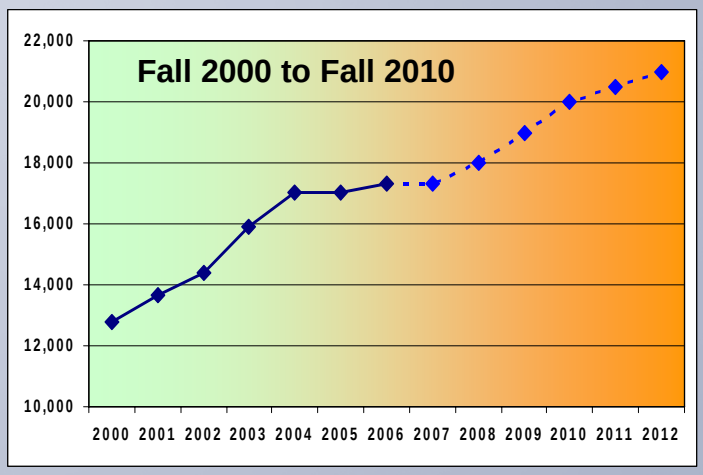
Enrollment Management:
UTPA Enrollment



45

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Enrollment Management:
UTPA Recruitment plans

- **Undergraduate Students**
  - Increase prospect pool by 10% each year for next three years
  - Increase number of out-of-valley students by 10% per year
  - Increase participation by Starr County residents
  - Enhance the quality of students in the freshman class
  - Engage all colleges in enhanced recruitment
  - Enhance transfer enrollment by 50 students each fall for 3 years
- **Graduate Students**
  - Increase graduate student enrollment to 17.5% by 2010
  - Increase graduate enrollment from other institutions
  - Increase enrollment of international graduate students
  - Increase applicants to doctoral business program from 100 to 140 by 2010

46

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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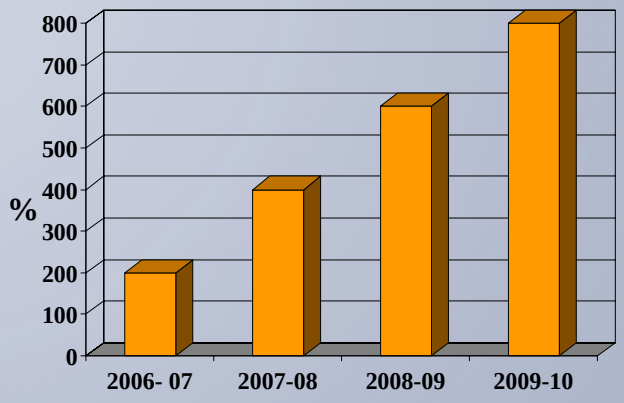
Enrollment Management:
UTPA Early College High School



47

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Enrollment Management:
UTPA Retention plans

- Undergraduate Students
  - Improve freshman retention to 75% by 2010
  - Improve sophomore persistence to 75% by 2010
  - Develop student engagement
  - Assist sophomores improving academic skills
  - Assist sophomores in adapting to student life
  - Assist students in English 1320 and 1321
- Graduate Students
  - Decrease graduate student attrition rate

48

10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)

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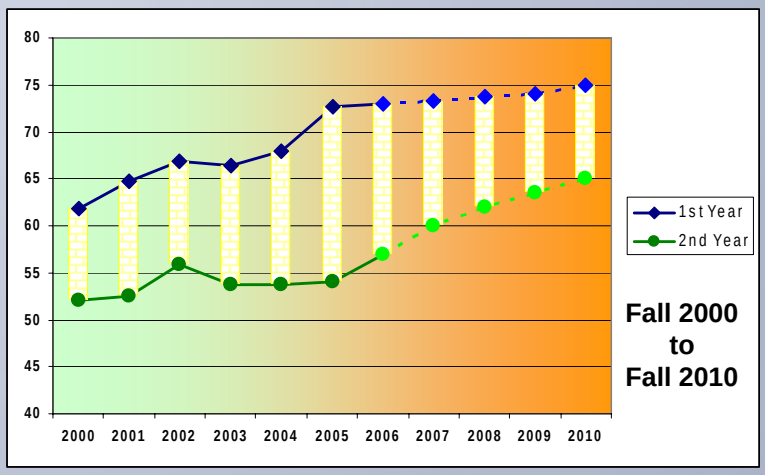
Enrollment Management:
UTPA Retention plans



49

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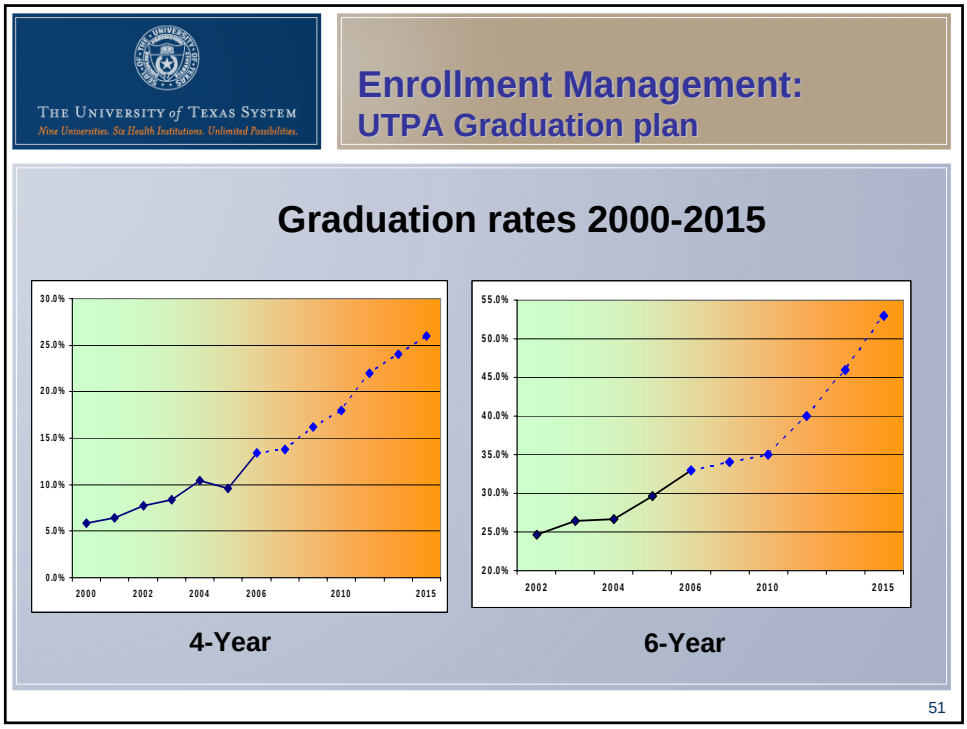
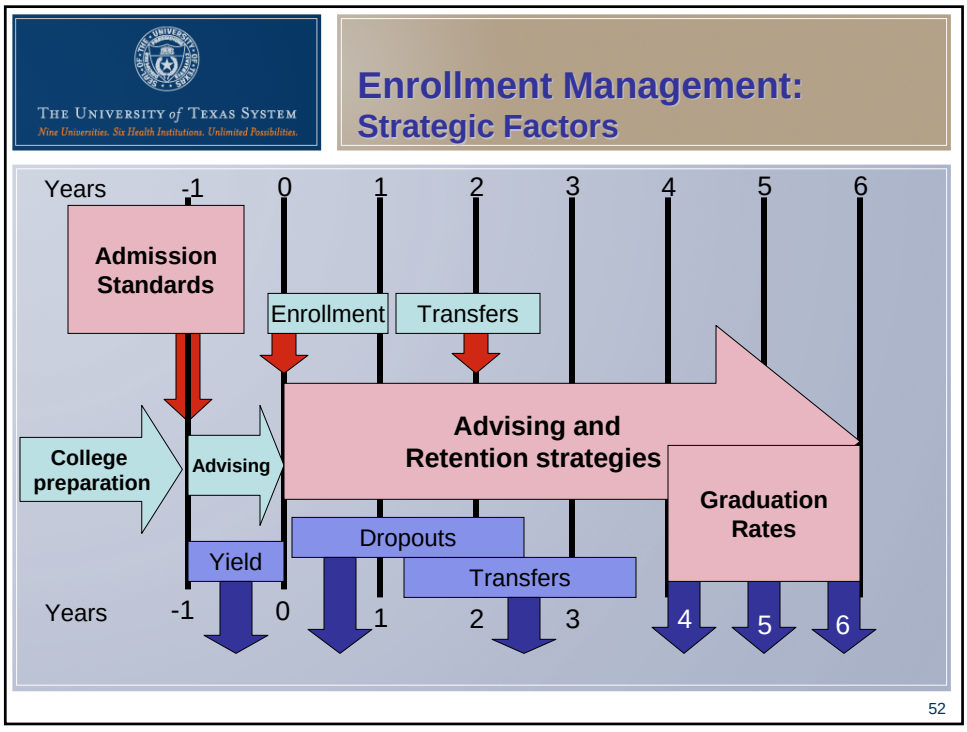
Enrollment Management:
UTPA Graduation plan

- **Undergraduate Students**
  - Increase 4-year graduation rates to 18% by 2010 and 26% by 2015
  - Increase 6-year graduation rates to 35% by 2010 and 53% by 2015
- **Graduate Students**
  - Decrease the time-to-graduation for graduate students
  - Increase the average SCH per student

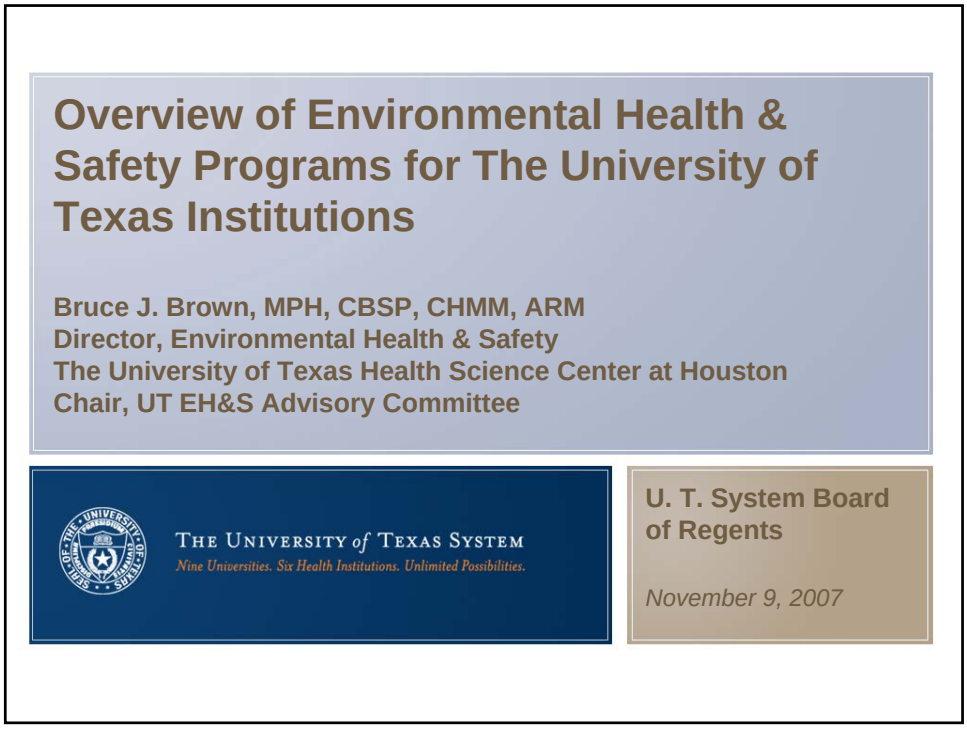
50

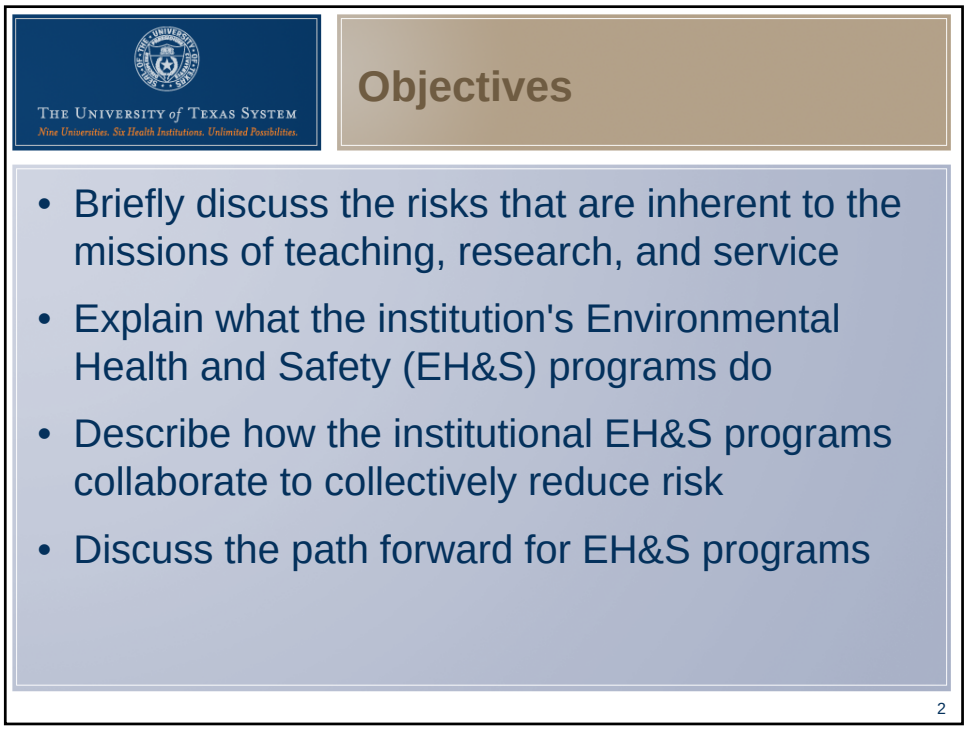
10. U. T. System: Report and discussion of enrollment management including potential changes in admission standards, retention, and graduation rates (cont.)





2. U. T. System: Report on Environmental Health and Safety at U. T. System institutions






The University of Texas System
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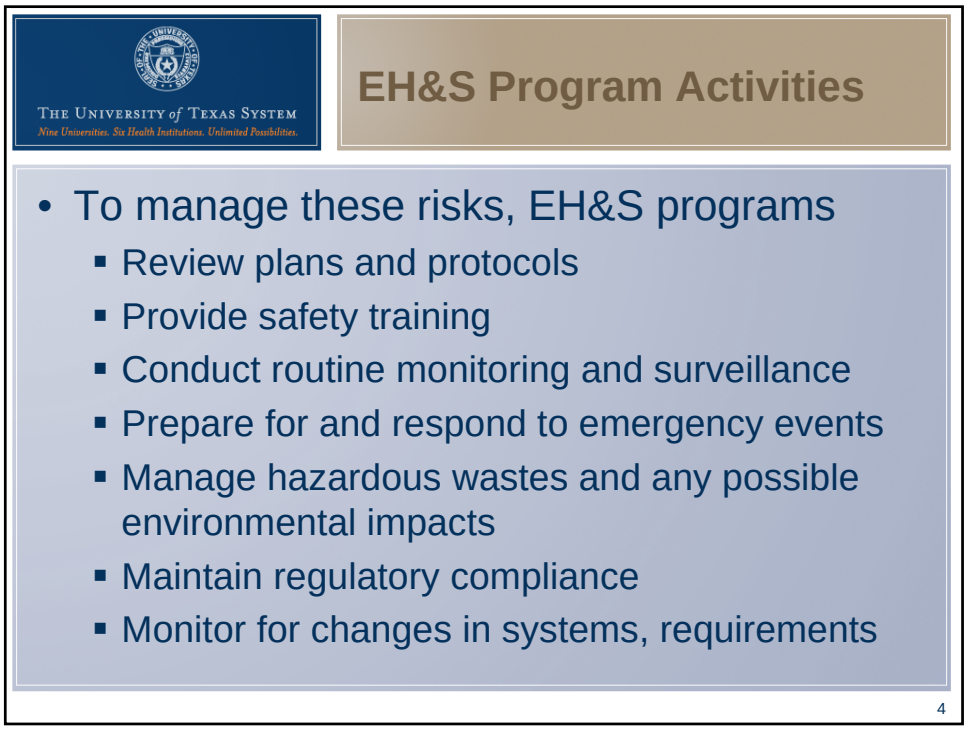
Institutional EH&S Risks
Fire
Chemical
Biological
Radiation
Environmental
3


The University of Texas System
Nine Universities. Six Health Institutions. Unlimited Possibilities.
EH&S Program Activities
To manage these risks, EH&S programs
Review plans and protocols
Provide safety training
Conduct routine monitoring and surveillance
Prepare for and respond to emergency events
Manage hazardous wastes and any possible environmental impacts
Maintain regulatory compliance
Monitor for changes in systems, requirements
4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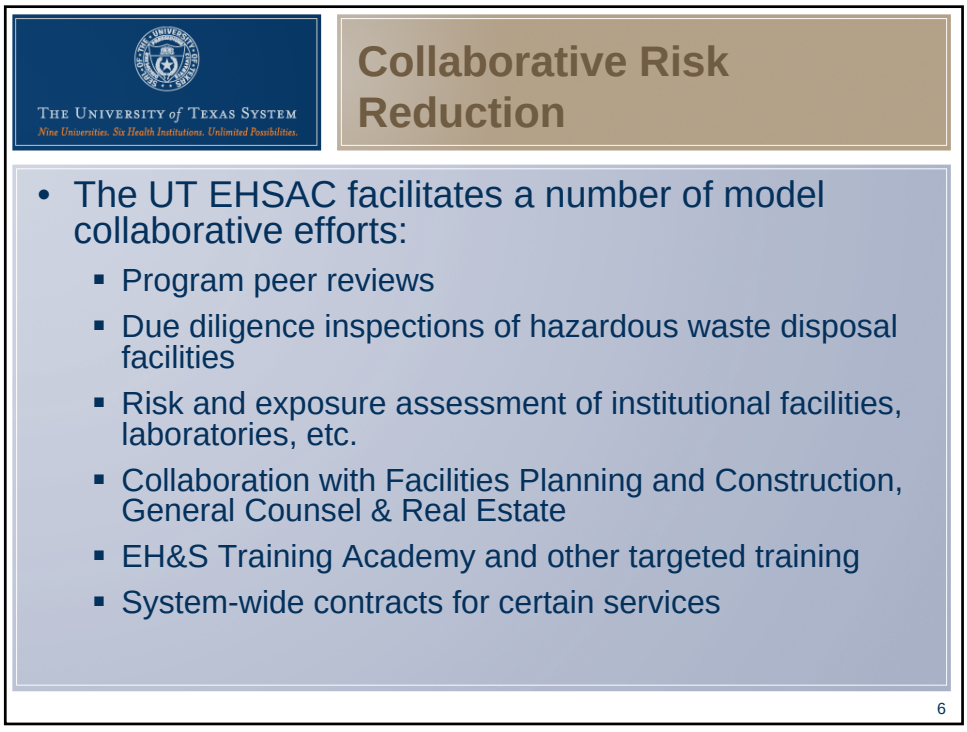
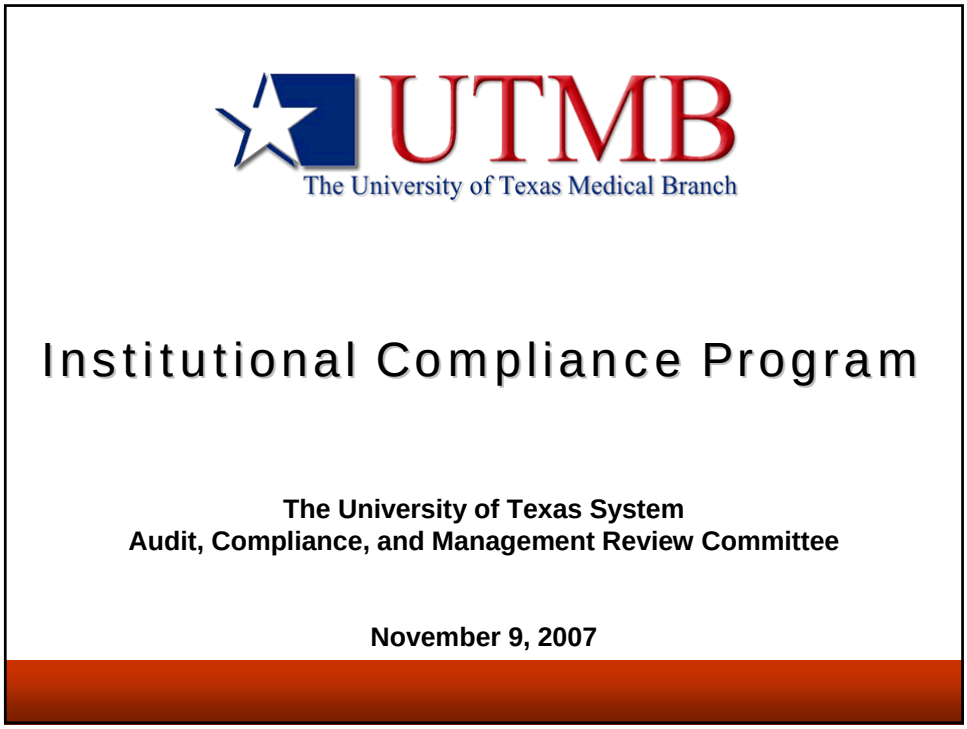
UT EH&S Advisory Committee
• Established in 1990
• Membership consists of UT institution EH&S Directors and representatives from UT System (ex officio)
• Enhance communication and collaboration
• Share best practices
• Recommend regulatory compliance strategies
• Four Advisory Groups
5


THE UNIVERSITY of TEXAS SYSTEM
Nine Universities. Six Health Institutions. Unlimited Possibilities.
Collaborative Risk Reduction
• The UT EHSAC facilitates a number of model collaborative efforts:
▪ Program peer reviews
▪ Due diligence inspections of hazardous waste disposal facilities
▪ Risk and exposure assessment of institutional facilities, laboratories, etc.
▪ Collaboration with Facilities Planning and Construction, General Counsel & Real Estate
▪ EH&S Training Academy and other targeted training
▪ System-wide contracts for certain services
6


The University of Texas System
Nine Universities. Six Health Institutions. Unlimited Possibilities.
Summary
• Every stakeholder of The University of Texas expects the teaching, research, and service missions to be carried out in manners that are safe and compliant
• Certain risks are inherent to excellence in higher education
• The institution's EH&S program plays a vital role in appropriately managing these risks
7

3. U. T. System: Annual Report on the System-wide Compliance Program and Institutional Compliance Program report for U. T. Medical Branch - Galveston



Institutional Compliance Committee

- UTMB President
- Institutional Compliance Officer (Chairman)
- Associate Dean for Research Administration
- Dean, School of Medicine
- Vice President and Chief Executive Officer for UTMB Hospitals & Clinics
- Chief Financial Officer
- Chief Academic Officer
- Chief Physician Executive
- Director, Audit Services (*ex officio, nonvoting*)
- Director of Legal Affairs (*ex officio, nonvoting***)**

UTMB

3. U. T. System: Annual Report on the System-wide Compliance Program and Institutional Compliance Program report for U. T. Medical Branch - Galveston (cont.)

Compliance Subcommittees

- **Professional Fee Billing**
- **Hospital Billing**
- **Research**
- **Information Security**
- **Human Resources**
- **Environmental Health & Safety**

UTMB

Top High Risk Areas

- **Professional Fee Billing**
  - **Consults**
  - **Documentation of Medical Necessity**
- **Hospital Billing**
  - **Emergency Medical Treatment and Active Labor Act (EMTALA)**
  - **One day stays**
- **Research**
  - **Effort Reporting**
  - **Research Costs**
- **Information Security**
  - **Social Security Number Security**
  - **Security Breaches**
- **Human Resources**
  - **Misclassification of Classified-Exempt and Classified-Nonexempt**
- **Environmental Health & Safety**
  - **Select Agents**
  - **Laboratory Safety Procedures**

UTMB

3. U. T. System: Annual Report on the System-wide Compliance Program and Institutional Compliance Program report for U. T. Medical Branch - Galveston (cont.)

General Compliance Training Information

- **Required of new and existing employees annually**
  - **Required of new employees within 30 days of hire.**
- **Provided at New Employee Orientation in classroom setting**
- **Online training available for existing employees**
- **Classroom training offered monthly or upon request**
- **Suspension (without pay) of all employees who fail to comply**
- **Completion rate for FY07- 100% of required employees**

UTMB

General Compliance Trainings

Annual Required Training

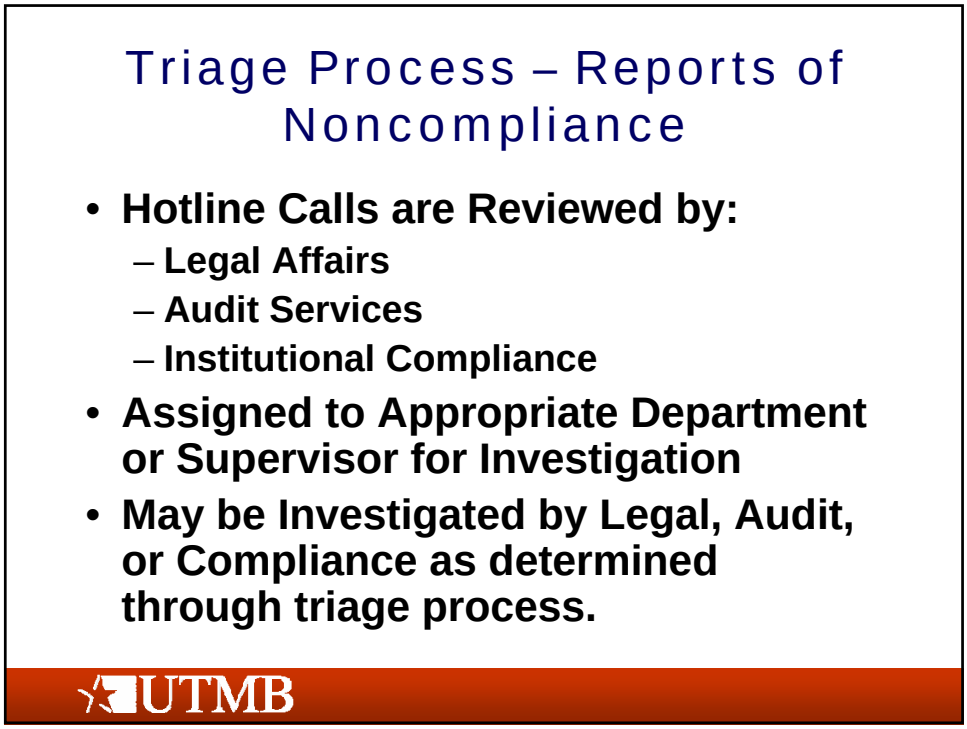
- UTMB Compliance Program
- Institutional Compliance Agreement (ICA) requirements
- Standards of Conduct Guide
- Deficit Reduction Act
- Reporting fraud and abuse
- Confidentiality and integrity
- Business information and information systems
- Ethical conduct in the workplace and employment practices
- Health and safety

Clinical Compliance Training

- Federal health care program requirements regarding the accurate coding and submission of claims
- Policies, procedures, and other requirements applicable to the documentation of medical records
- Federal health care guidelines
- Legal sanctions for violations of the federal health care program requirements
- Examples of proper and improper claims submission practices, as they pertain to physician services

UTMB

3. U. T. System: Annual Report on the System-wide Compliance Program and Institutional Compliance Program report for U. T. Medical Branch - Galveston (cont.)



3. U. T. System: Annual Report on the System-wide Compliance Program and Institutional Compliance Program report for U. T. Medical Branch - Galveston

The University of Texas System
Institutional Compliance Program Report Summary
Annual Report, Fiscal Year 2007

Program Executive Summary

The University of Texas (U. T.) System-wide Institutional Compliance Program (Program) was established in 1998 to ensure that the entire U. T. System, including its 15 institutions, operates in compliance with all applicable laws, policies, and regulations governing higher education institutions. The responsibilities for the Program are outlined in the *Action Plan to Ensure Institutional Compliance* (Action Plan) approved by the Board of Regents in 1998 and updated in 2003. The Action Plan delegates to the System-wide Compliance Officer the responsibility for "apprising the Chancellor and the Board of Regents of the compliance programs and activities at System Administration and at each of the institutions". The Action Plan also provides that the Compliance Officers at System Administration and at each institution are responsible and will be held accountable for a risk-based process that builds compliance consciousness into daily business processes, monitors the effectiveness of those processes and communicates instances of noncompliance to appropriate administrative officers for corrective, restorative and/or disciplinary action.

As outlined in the Action Plan, the System-wide Compliance Officer since 2000, Mr. Charles G. Chaffin, provides support to the institutional compliance officers by:

- Facilitating best practice identification
- Providing training and support to each institution on those practices
- Identifying emerging issues
- Working with institutions on reported instances of noncompliance
- Reporting System-wide compliance activities
- Coordinating System-wide compliance efforts
- Advancing the discipline of compliance in higher education/health care.

Program Activity

During Fiscal Year (FY) 2007, Program efforts included:

1. **Facilitating the sharing of best practices by coordinating the activities of the Institutional Compliance Advisory Council.**

   The Institutional Compliance Advisory Council (ICAC) is a self-governing body comprised of the compliance officer and compliance staff of each U. T. System institution. The ICAC meets quarterly at rotating institutions. The Executive Committee of the ICAC, whose membership is elected annually, determines meeting dates and locations. Within the ICAC, there are three standing committees: Peer Review and Assurance, Risk Assessments and Monitoring Plans, and Training. The committees are chaired by a member of the Executive Committee who, along with an appointed U. T. System liaison, are responsible for ensuring that the committee members establish and deliver upon annual goals and objectives.

   During FY 2007, each of the standing committees revised and refined their goals and objectives, met monthly or semi-monthly, and made significant progress toward achieving their objectives.

   The Peer Review and Assurance Committee worked to develop formal standards for conducting peer reviews of institutional compliance programs. In addition, the committee is working toward

providing recommendations for the most effective ways to perform assurance activities for specific high-risk areas.

The Risk Assessment & Monitoring Plan Committee is developing a list of monitoring activities and re-testing best practices that can be conducted by the central compliance offices for various high-risk areas. Environmental Health & Safety, Medical Billing, and Time & Effort Reporting are the first areas to be reviewed.

The Training Committee reviewed current compliance training practices System-wide and will be issuing recommendations and developing guidelines for compliance training, as well as identifying additional training courses that should be developed for the benefit of health and academic institutions.

2. Providing training and support to the institutions and advancing the discipline of compliance in higher education/health care by hosting the *5th Conference for Effective Compliance Systems in Higher Education*.

Held at the Hilton Convention Center in downtown Austin, this two day conference drew a large and diverse national audience. Over 300 attendees from 116 institutions of higher education and professional organizations gathered to learn and share best practices and to network. The U. T. System highlighted its excellence in research and academia with the inclusion of many of its most distinguished faculty and staff members as presenters. U. T. System representatives spoke jointly with nationally recognized experts on several topics, including Conflict of Interest and Export Control. In addition, some sessions included representation from regulatory entities, such as the National Collegiate Athletic Association (NCAA) and the U. S. Department of Health and Human Services Office of Counsel to the Inspector General.

With keynote speeches delivered by Regent Robert Estrada and Chancellor Mark Yudof, the U. T. System publicly demonstrated the depth of its commitment to institutional compliance. In fact, the U. T. System Compliance Program has drawn the attention of many national and international compliance organizations such as the Open Compliance and Ethics Group (OCEG), Ethics & Compliance Officers Association (ECOA), Health Care Compliance Association (HCCA) and Society for Corporate Compliance and Ethics (SCCE). These organizations have eagerly embraced and applauded the efforts put forth by our program and have shown their support by attending this year's conference and encouraging our participation in their endeavors, which serve to advance the burgeoning field of institutional compliance.

3. Coordinating the System-wide Information Security Initiative by establishing a System-wide Chief Information Security Officer and identifying roles and responsibilities for Information Security across the U. T. System.

The System-wide Information Security Initiative began with the ratification of the 2006 Action Plan to Enhance Information Security Compliance. Hired in November 2006, the System-wide Chief Information Security Officer (CISO) reports directly to the System-wide Compliance Officer and the Chancellor and is charged with providing leadership, strategic direction, and coordination for the System-wide Information Security Initiative.

During the past year, the CISO defined goals and activities for program execution, met with leadership during visits to nine of the U. T. institutions, made presentations to many groups within the University community including the U. T. System Faculty Advisory Council, the Strategic Leadership Council, and Business Managers Council, and established the CISO Council which met on eight occasions. Additionally, three existing policies were consolidated to form the University of Texas System *Information Resources Use and Security Policy* (UTS-165), and in

June, the CISO Office issued Information Security Practice Bulletin #1 requiring that encryption be used on mobile devices containing confidential University data.

The CISO Council formed eight working groups for the purposes of defining standards, identifying training needs, and identifying potential System-wide technology deployments. As an outgrowth of these groups, development of a standards-based Information Security Program and Risk Assessment Methodology was begun. Funding for FY 2008 was requested to address areas of specialized security training, risk assessment, and configuration management software.

4. Other activities include:

- Conducting a follow-up compliance program peer review at U. T. Southwestern Medical Center
- Facilitating the compliance program peer review at U. T. San Antonio
- Refining the institutional compliance program reporting format
- Updating the System-wide Executive Compliance Committee charter
- Investigating reported instances of noncompliance
- Participating in meetings of the High-risk Working Groups
- Developing a high-risk area compliance design audit program for Medical Billing.
- Revising the Incident Reporting Policy and Procedures
- Promoting the U. T. System-wide compliance program through:
  - Presentations at the annual and mid-year Association of College and University Auditor (ACUA) conferences
  - Active participation in the University Compliance Group (UCG)
- Identifying and highlighting emerging compliance issues through "In the News" email publication

Program Assessment

As the System-wide Compliance Officer is responsible for apprising the Chancellor and the Board of Regents on the status and activities of the Program, the following is an overall assessment of the Program:

The U. T. System has compliance programs in place, including compliance officers and established executive compliance committees, at each institution and System Administration. The programs include appropriate general compliance training taught to each new employee and continuing employee training at least every two years. Using the *Model Standards of Conduct Guide* developed by the System-wide Compliance Office, each institution has developed its own guide to use as a basis for its compliance training. In addition, each institution has developed confidential reporting mechanisms, risk assessments which identify key issues to be monitored and mitigated, and training and monitoring plans in a majority of the high-risk areas at most of the institutions.

Opportunities for enhancement of controls and monitoring plans exist in some areas, including research and information technology (IT) security. During FY 2007, each of the institutions has been developing effort reporting policies and establishing training programs and monitoring plans for those policies per System-wide policy UTS-163 (*Guidance on Effort Reporting Policies*). In addition, each institution underwent an internal audit to determine if satisfactory progress was made in implementing UTS-163. IT security efforts over the course of the year included establishing a System-wide CISO and identifying roles and responsibilities for information security across the U. T. System, as described above in the Program Activity section.

Another area showing improvement during the year was the institutional Executive Compliance Committees (ECC). The ECCs play a vital role in prioritizing and monitoring the high-risk areas,

ensuring that risk assessments are conducted and that monitoring plans are developed and followed. System-wide compliance liaisons who attended many of the institutional ECC meetings over the course of the year observed that several institutions made great strides during the year in this area.

The assessment performed by Strategic Management Systems, Inc. (SMS) identified several opportunities for enhancement regarding the functioning of the Program, most of which will be an area of focus in FY 2008. Recommendations included:

- Separating the compliance function from the internal audit function
- Increased oversight, monitoring, inspections of the institutional compliance programs
- Increased System-wide compliance program staffing
- Policy development for risk assessments, monitoring/assurance expectations, records management, hotline protocol and investigations, among others

Institutional Program Activity[1]

Per the Action Plan, the compliance officers at System Administration and each institution have the following responsibilities:

- Actively engage an institutional Executive Compliance Committee (ECC) that meets at least quarterly
- Provide campus-wide compliance training and promote compliance awareness
- Perform annual compliance risk assessments
- Assist in specialized training for high-risk compliance areas
- Continuously monitor and inspect the institution's high-risk compliance activities
- Manage the institution's confidential reporting mechanisms (hotline, etc.)
- Report compliance activities and significant compliance issues to executive management, the System-wide Compliance Officer, and the Board of Regents.

The following is a summary of institutional progress in implementing these elements:

Executive Compliance Committees:
Each institution has an ECC that meets at least quarterly to oversee the institutional compliance program. Quarterly meetings were held at each institution. In addition, U. T. Austin and U. T. Health Science Center – Houston continue to hold monthly meetings. The System-wide Compliance Office liaisons attended numerous ECC meetings and continue to support the compliance officers in enhancing the ECC role.

Training and Awareness:
General compliance training is conducted using a variety of formats including online, classroom, and written materials. Employees are typically scheduled to receive general compliance training during new employee orientation and thereafter refresher training on an annual or biannual basis. Compliance Officers have been effective at ensuring that General Compliance Training and Codes of Conduct guides are delivered to the appropriate personnel in a timely manner.

[1] Details regarding activities at the institutional level are published in the *Institutional Compliance Program Annual Report for FY 2007*.

3. U. T. System: Annual Report on the System-wide Compliance Program and Institutional Compliance Program report for U. T. Medical Branch - Galveston (cont.)

Risk Assessment:
Most ECCs review their institution's identified risks and approve the designation of "institutionally significant" compliance risks – risks that, if realized, would have a significant impact on the ability to achieve the goals and objectives of the institution.

The majority of institutions have identified between eight and fifteen institutionally significant areas of high risk, with multiple high-risk exposures within those areas. Common risk areas of focus during FY 2007 included: Information Security, Research-Time and Effort, Environmental Health & Safety, Medical Billing, Endowments, Human Subjects Research, Animal Care, and Select Agents.

Specialized Training:
During the quarter, institutions conducted specialized training in many of the areas identified as high risk, including: Information Technology, Information Security, Human Subject Protection, Effort Reporting, Athletics, NCAA, Endowments, Export Control, Hazardous Chemicals, Student Financial Aid, HIPAA, FERPA, OSHA, Fire Safety, Technology Transfer, Billing Compliance, Records Retention, and Select Agents.

Monitoring:
A designated party is assigned accountability for each high-risk compliance issue and is responsible for verifying that monitoring activities are being appropriately performed for many of the high-risk areas. Numerous internal and external inspections and reviews were conducted on many of the risk items in FY 2007. Identified instances of noncompliance typically resulted in corrective action being taken and monitoring plans being revised, when appropriate. Policies and procedures are being developed and/or refined at the institutions to comply with The University of Texas System-wide Policy UTS-163, *Guidance on Effort Reporting Policies.*

Confidential Reporting:
Each institution has a confidential reporting mechanism with standardized review, resolution, and reporting procedures. On a monthly basis, institutions are required to report to the System-wide Compliance Officer regarding any significant reports of noncompliance. At the end of the year, institutions are required to report on the total number of calls received through their respective hotlines.

Compliance Program Reporting:
Reporting continues to be an area of emphasis during FY 2007. The standardized reporting format developed by the System-wide Compliance Office is being utilized by all programs to report to the System-wide Compliance Officer and Board of Regents.

Institutional Organizational Matters:
U. T. Dallas has a new Compliance Manager who began May 1. U. T. Health Center – Tyler has appointed the Compliance Director as interim Compliance Officer as the current Compliance Officer resigned her position effective August 31, 2007. U. T. Pan American and U. T. Health Science Center - Houston have hired new compliance staff members, and U. T. Health Science Center – San Antonio is in the process of recruiting additional staff.

Institutional Action Plan Activities:
Many of the Annual Action Plan deliverables established by each institution for FY 2007 were completed or are in progress and focused on activities including: Quality Assessment Reviews, executive compliance committee training, inspections of high-risk areas, implementation of Enterprise Risk Management, compliance awareness surveys, compliance committee self-evaluations, updating management responsibilities handbook, Faculty Credentialing reviews, assisting in the development of a campus emergency operations plan, information security and social security number security risk management plan, records retention schedule updates, updating institutional compliance manuals, publishing institutional compliance newsletters, and maintaining institutional compliance websites.

Compliance Program Assessments

SMS performed an independent assessment of the effectiveness and structure of the System Administration and System-wide Compliance Offices in late April 2007 and late May 2007, respectively. Final reports were received in the fourth quarter of FY 2007, and both organizations are reviewing recommendations and defining next steps as appropriate.

In the fourth quarter of FY 2007, The University of Texas at San Antonio underwent a compliance program peer review which concluded that the institutional compliance office "generally conforms" to the elements of an effective compliance program as defined by the Action Plan and *Federal Sentencing Guidelines*. "Generally conforms" is the highest rating given to a compliance program. The review noted many strengths of the program including the proactive and professional approach of staff, the extensive use of dedicated risk assessment software and voting equipment, and the nearly 100% rate for faculty and staff participation in general compliance training. The review also provided several observations and recommendations for enhancing the compliance program in the areas of risk assessments, monitoring, training, and participating in institutional initiatives.

Confidential Reporting

Institutions have established mechanisms for confidential reporting including: third-party serviced telephone hotlines, anonymous electronic mailboxes, voice mailboxes, and postal mailboxes. The confidential reporting mechanisms are publicized through web sites, posters, payroll stuffers, and newsletters. Additionally, reports may be made directly to the institutional Compliance Officer. Reports of suspected instances of noncompliance received in FY 2007 were categorized as follows:

Type	Number	% of Total
Improper Use of University Property & Resources	53	7%
Human Resources	347	49%
Healthcare	96	14%
Research	10	1.5%
Policy / Ethics	45	6%
Safety	10	1.5%
Fiscal Reporting/Audit	41	6%
Miscellaneous	105	15%
Total	707	100%

Each institution has established an appropriate and effective triage process. Members of the triage teams may include: Compliance Officer, Chief of Police, Director of Internal Audit, Director of Human Resources, Legal Officer, or other members of the Executive Compliance Committee. The institutions report that the confidential reports received by the compliance programs have been appropriately resolved or are currently under investigation.

The 2007 Annual Summary Report submitted by:

Charles G. Chaffin

Charles G. Chaffin, System-wide Compliance Officer

5. U. T. System: Report on the System-wide internal audit activities and Internal Audit Department report for U. T. Health Science Center - San Antonio

The University of Texas Health Science Center at San Antonio

Office of Internal Audit

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U. T. System Board of Regents

November 9, 2007

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Internal Audit Committee

Audit Committee Members

- President/Chair
- Chief Operating Officer
- Executive Vice President for Business Affairs
- Vice President for Research
- Vice President and Chief Information Officer
- Dean, School of Medicine
- Dean, Dental School
- Dean, School of Allied Health Sciences
- Assistant VP/Chief Compliance Officer

2

5. U. T. System: Report on the System-wide internal audit activities and Internal Audit Department report for U. T. Health Science Center - San Antonio (cont.)

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Internal Audit Committee (continued)

- External, President of Frost Bank
- External, Former University Health System Board of Managers
- External, Former President of SW Research for Biomedical Research

❑ Committee meets quarterly with last meeting held on October 15, 2007

3

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Internal Audit Department

The Internal Audit Office has 8 budgeted positions:

Diane Salvador, MBA, CPA, CIA, CISA	Director
William Taylor, CIA, CISA, CISSP	Senior Audit Manager
Jeffery Bledsoe, MPA, CPA	Audit Manager
Liliana Martinez, MAcc, CPA	Audit Manager
Robert McDermott, MAcc, CPA	Auditor III
Herlinda Serna, CIA, CISA	Auditor III
Darryl Rhames	Auditor III
Shirley Gonzales	Administrative Asst I

❑ Average number of reports issued annually – 24

4

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Internal Audit Reporting Structure

- Director of Internal Audits reports directly to the President
- Director of Internal Audits reports administratively to the Chief Operating Officer

5

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High Risk Areas to be Audited in FY 2008

- **South Texas Campuses** – Laredo, Harlingen, Edinburg
- **Business Continuity Planning**
- **IT** – Disaster Recovery, Decentralized IT Mgmt, Change Mgmt, IT Infrastructure, IT Security, IT Risk Assessment
- **Patient Care** – Patient Scheduling & Registration, Patient Customer Service, Practice Plan Financial Mgmt, Consulting on Electronic Medical Records implementation
- **Research** – Conflict of Interest, Research Compliance

6

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Peer Review Follow Up

Follow Up to 2005 Peer Review

Overall, considerable progress was made in addressing the issues identified in the 2005 report and the team commended the actions taken by the Director.

Suggested strategies for continued improvement:

- Promote IT Audit Manager to Senior Audit Manager, and develop a mentoring program for the two general Audit Managers, which are new to the department.
- A mentor for the Director would be beneficial.

7

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Peer Review Follow Up (continued)

- Related to the Internal Audit Committee:
  - Add another external member,
  - Enhance the meeting content, including focused discussions of risks and significant issues, and
  - Separate the Audit and Compliance Committee meetings.

8

The University of Texas System
Internal Audit Program
Annual Report Summary
Fiscal Year Ended August 31, 2007

Program Executive Summary

The University of Texas (U. T.) System has established Internal Audit Programs at each of the 15 institutions and System Administration. The Internal Auditor provides independent, objective assurance, and consulting services designed to add value and improve U. T. System's operations. Additionally, the Internal Auditor is responsible for providing executive management with information about the adequacy and effectiveness of the institution's system of internal administrative and accounting controls and the quality of operating performance when compared with established standards. In order to provide these services, the internal auditors at System Administration and each institution:

- Perform annual risk assessments;
- Develop detailed work plans;
- Conduct quarterly Internal Audit Committee meetings; and
- Report internal audit activities and significant recommendations to executive management.

Mr. Charles G. Chaffin, Chief Audit Executive, is responsible for apprising the Chancellor and Board of Regents of the status and activities of the institutional Internal Audit Programs.

Significant Accomplishments and Activities

During fiscal year (FY) 2007, the Internal Audit Programs provided numerous value-added services to the institutions, supplied support to external organizations, participated in numerous professional organizations, managed student internship opportunities, and continued to enhance the established Internal Audit Programs through Quality Assurance Reviews.

- Value-added Services – The Internal Audit Programs worked to ensure audits and projects added value and addressed the needs and concerns of executive management. Audits and projects included special investigations requested by executive management, reviews of information systems and security as well as other core business operations, continued implementation of Enterprise Risk Management, and support to the Deloitte & Touche, LLP external financial audit.

    - *Deloitte & Touche* – All of the Internal Audit Programs successfully completed, by the due date, the financial audit work directed by Deloitte & Touche, LLP for the FY 2006 external financial audit.

- External Support – Select Internal Audit Programs provided audit assistance to various external organizations, including an assessment of overall financial operations at Texas Southern University requested by their Acting President, support to the State Auditor's Office in conducting their OMB A-133 Single Audit (as part of the State of Texas financial audit) and their enrollment and accountability audit, and support to the Comptroller of Public Accounts in conducting their post payment audits at U. T. institutions.

The University of Texas System
Internal Audit Program
Annual Report Summary
Fiscal Year Ended August 31, 2007

- Professional Organizations and Certifications – Throughout the year, numerous members of the Internal Audit Programs have made presentations at national and regional conferences including those sponsored by the Association of College and University Auditors (ACUA), the Texas Association of College and University Auditors (TACUA), the Institute of Internal Auditors (IIA), and the National Association of College and University Business Officers (NACUBO). Many of our Internal Audit Directors have also published internal audit related articles and held various officer positions and actively participated in professional organizations, such as ACUA, TACUA, the Texas Society of Certified Public Accountants, IIA's International Standards Setting Board, and NACUBO's Accounting Principles Council.

  Additionally, the Internal Audit Programs System-wide had several employees pass all or part of internal audit related certification exams, including Certified Internal Auditor, Certified Public Accountant, Certified Information Systems Auditor, and Certified Government Audit Professional.

- Internship Opportunities – Several Internal Audit Programs employed student interns from their campuses to assist in conducting fieldwork on various audits to provide the students with real-world experience while also increasing their own staff supervisory and project management skills. These students have gone on to be offered positions with the U. T. Internal Audit Programs as well as with outside companies and government agencies.

- Quality Assurance Reviews – Quality Assurance Reviews (QARs) ensure the Internal Audit Programs are conducting their work in compliance with IIAs' *International Standards for the Professional Practice of Internal Auditing* (Standards). QARs are performed by audit professionals independent of the institution. QARs were completed for six institutions during the year: U. T. Austin, U. T. Dallas, U. T. Pan American, U. T. Medical Branch – Galveston, U. T. Health Science Center – Houston, and U. T. M. D. Anderson Cancer Center. Additionally, follow-up QARs were completed at U. T. El Paso, U. T. San Antonio, and U. T. Health Science Center – San Antonio. Overall, the Internal Audit Programs were found to be in compliance with the Standards and have implemented or are in the process of implementing recommendations to improve efficiency and operations. Additionally, some Internal Audit Directors participated as team members in QARs of other institutions.

The University of Texas System
Internal Audit Program
Annual Report Summary
Fiscal Year Ended August 31, 2007

Internal Audit Program Activities

The following summarizes the consolidated activities of the institutional Internal Audit Programs compared to the budgeted plan for FY 2007:

Area	Audit Budget Hours*	Audit Actual Hours	Hours Variance	Percent Completion
UT System Requested	24,360	26,722	2,362	110%
Externally Required	12,445	13,499	1,054	108%
Risk Based	46,608	52,308	5,700	112%
Change in Management	8,502	10,656	2,154	125%
Follow-up	4,067	5,781	1,714	142%
Projects	27,848	32,904	5,056	118%
Total	123,830	141,870	18,040	115%

***** "Audit Budget Hours" differs from the fiscal year 2007 approved budget number due to a calculation error previously made in the System Administration budget amount and the exclusion of the fiscal year 2007 Compliance budget.

Overall, the Internal Audit Programs accomplished the majority of their approved annual audit plans. Some of the audit hours budgeted were transferred, reallocated, cancelled or carried forward to FY 2008 for various reasons, including limited staff resources and special management requests or investigative matters that emerged during the year. These changes were communicated to the executive management and/or the institutional internal audit committees. See **Appendix A** for total budget hours versus actual hours by major category for FY 2007.

Internal Audit Program Staffing Activities

Positions:

Number Budgeted:	123.0
Number Filled:	112.9
Average Years Experience:	12.5

Certifications:

Number of Certified Public Accountants:	51
Number of Certified Internal Auditors:	56
Number of Certified Information Systems Auditors:	18
Other Certifications:	26
Average Percentage of Staff with a certification:	74%

Average Training Hours per Auditor: 58.7

The University of Texas System
Internal Audit Program
Annual Report Summary
Fiscal Year Ended August 31, 2007

Appendix A
FY 2007 System-wide Audit Plan Status

	UT System Requested	Externally Required	Risk Based	Change in Management	Follow-up	Projects	Total Actual Hours *(NOTE 1)*		Total Priority Budget Hours *(NOTE 2)*	Percent Completion
U. T. System Administration	1,908	2,893	6,759	321	418	2,722	15,020	*	13,072	115%
Large Institutions:										
U. T. Austin	2,596	389	5,176	2,217	618	7,269	18,265		14,725	124%
U. T. Southwestern	2,676	1,263	5,367	3,013	275	3,900	16,493		14,855	111%
U. T. Medical Branch at Galveston	2,965	2,374	3,159	953	764	3,006	13,221		11,800	112%
U. T. HSC - Houston	1,687	1,047	5,287	569	300	1,993	10,882		9,958	109%
U. T. HSC - San Antonio	2,584	766	2,728	333	562	973	7,946		6,700	119%
U. T. MDA Cancer Center	2,182	578	9,842	730	772	2,866	16,969		13,660	124%
subtotal	14,689	6,417	31,558	7,815	3,290	20,007	83,776		71,698	117%
Mid-size Institutions:										
U. T. Arlington	1,385	631	2,187	-	474	1,378	6,054		5,750	105%
U. T. Brownsville	1,083	320	971	132	113	1,509	4,128		3,648	113%
U. T. Dallas	879	138	4,208	173	89	460	5,946		5,073	117%
U. T. El Paso	2,052	767	3,715	1,037	700	1,799	10,069		7,915	127%
U. T. Pan American	1,064	887	925	786	102	1,593	5,356		4,465	120%
U. T. San Antonio	1,488	731	1,523	-	371	2,371	6,482		6,919	94%
subtotal	7,949	3,473	13,529	2,128	1,847	9,109	38,034		33,770	113%
Small Institutions:										
U. T. Permian Basin	561	195	18	-	-	84	858		1,212	71%
U. T. Tyler	757	256	445	393	60	411	2,322		2,376	98%
U. T. HC at Tyler	857	265	-	-	166	571	1,859		1,702	109%
subtotal	2,175	716	463	393	226	1,066	5,039		5,290	95%
TOTAL	26,722	13,499	52,308	10,656	5,781	32,904	141,869		123,830	119%
Percentage of Total	19%	10%	37%	8%	4%	23%	100%			

NOTE 1:
"Total Actual Hours" reflect total actual hours for the 12 months of fiscal year 2007.

NOTE 2:
"Total Priority Budget Hours" reflect budget hours approved by ACMR for priority projects, which are approximately 85% of total budget hours.

***** "Total Priority Budget" for U. T. System Administration differs from the fiscal year 2007 approved budget number due to a calculation error previously made and the exclusion of the fiscal year 2007 Compliance budget.