

Thoughts on Creating More Tier One Universities in Texas

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No widely accepted definition for Tier One

Some categories to consider:

- Association of American Universities (AAU)
 - AAU Universities with $\leq 30,000$ students of particular interest for Texas emerging research universities
- Research expenditures $> \$100$ M per year
- U.S. News and World Report rankings – top 50 publics
 - Combination of numeric criteria and reputation
- Texas Higher Education Coordinating Board
 - Research expenditures $> \$150$ M per year

Association of American Universities

State	AAU University (Year Admitted to AAU)	State	AAU University (Year Admitted to AAU)
AS	The University of Arizona (1985)	MN	University of Minnesota, Twin Cities (1908)
CA	California Institute of Technology (1934)	MO	University of Missouri-Columbia (1908)
CA	University of California, Irvine (1996)	MO	Washington University in St. Louis (1923)
CA	University of California, Los Angeles (1974)	NB	University of Nebraska-Lincoln (1909)
CA	University of Southern California (1969)	NC	Duke University (1938)
CA	University of California, Davis (1996)	NC	University of North Carolina at Chapel Hill (1922)
CA	University of California, San Diego (1982)	NJ	Rutgers, The State University of New Jersey (1989)
CA	University of California, Berkeley (1900)	NJ	Princeton University (1900)
CA	Stanford University (1900)	NY	University at Buffalo, SUNY (1989)
CA	University of California, Santa Barbara (1995)	NY	Cornell University (1900)
CO	University of Colorado at Boulder (1966)	NY	Stonybrook University-SUNY (2001)
CT	Yale University (1900)	NY	Columbia University (1900)
FL	University of Florida (1985)	NY	New York University (1950)
GA	Emory University (1995)	NY	University of Rochester (1941)
IA	Iowa State University (1958)	NY	Syracuse University (1966)
IA	University of Iowa (1909)	OH	Case Western Reserve University (1969)
IL	Northwestern University (1917)	OH	The Ohio State University (1916)
IL	The University of Chicago (1900)	OR	University of Oregon (1969)
IL	University of Illinois at Urbana-Champaign (1908)	PA	University of Pennsylvania (1900)
IN	Indiana University (1909)	PA	Carnegie Mellon University (1982)
IN	Purdue University (1958)	PA	University of Pittsburgh (1974)
KS	The University of Kansas (1909)	PA	The Pennsylvania State University (1958)
LA	Tulane University (1958)	RI	Brown University (1933)
MA	Brandeis University (1985)	TN	Vanderbilt University (1950)
MA	Harvard University (1900)	TX	The University of Texas at Austin (1929)
MA	Massachusetts Institute of Technology (1934)	TX	Texas A&M University (2001)
MD	The Johns Hopkins University (1900)	TX	Rice University (1985)
MD	University of Maryland at College Park (1969)	VA	University of Virginia (1904)
MI	University of Michigan (1900)	WA	University of Washington (1950)
MI	Michigan State University (1964)	WI	University of Wisconsin at Madison (1900)

Why Are Tier One Universities Important?

1. Overall economic impact of Tier One Universities
2. Attract key investment capital:
 - Federal research and development (R&D) funds
 - Venture capital funds
3. Attract top talent to Texas and keep top talent in Texas
4. Give Texans access to top quality national research universities

Overall Economic Impact of Tier One Universities

- Example: MIT
 - Alumni have founded more than 4,000 companies employing 1.1 million people and generating \$232 billion in sales – roughly equal to the economic output of Houston or DFW!
 - **One great, world-class university can have an economic impact on the order of one great city**
- Imagine ---
 - Boston (and Massachusetts) without MIT and Harvard
 - The San Francisco Bay area (and California) without Stanford and UC Berkeley
 - Austin (and Texas) without U. T. Austin

Texas Is Not Attracting Its Share of Investment Capital

- Texas has 8% of the U.S. population but only:
 - 5% of federal research and development (-\$2.8 B per year)
 - 5% of venture capital investment in 2007 (-\$0.9 B per year)
 - Summary: If Texas had its proportional share of federal R&D and venture capital investment, it would gain **\$3.7 B per year**
- Venture capital accounts for 0.2% of GDP but 10% of U.S. jobs and 18% of U.S. business revenue
- Note: In 2006 and in 2007, Austin had more venture capital investment than DFW, Houston, and San Antonio, combined

Sources: Population Data: Population Reference Bureau, 2007 U.S. Population Data Sheet
Federal R&D: 2004 expend., National Sci. Fdn., <http://www.nsf.gov/statistics/nsf07323/tables/tab82.xls>
Venture Capital: pwcmoneytree.com/MTPublic/ns/nav.jsp?page=notice&iden=B
Texas Distribution of VC Data: Mr. Ron Nash's analysis of Dow Jones Venture Source data by area code, 2007

Texas Is Losing College-Age Talent to Other States

- In Fall, 2006:
 - Texas sent 10,163 high school students to doctoral granting universities in other states
 - Texas attracted 4,358 high school graduates from other states to doctoral-granting Texas universities
 - **Texas had a net brain drain of 5,815 high school students to universities in other states in 2006**
 - The problem is getting worse – the loss increased by 54% from 2000 to 2006.
- Example of positive impacts from talent importation: 15% of Rice University's undergraduates hail from Harris County, but 33% of its alumni live there

Texas Lags in the Competition for Top Science and Engineering Talent

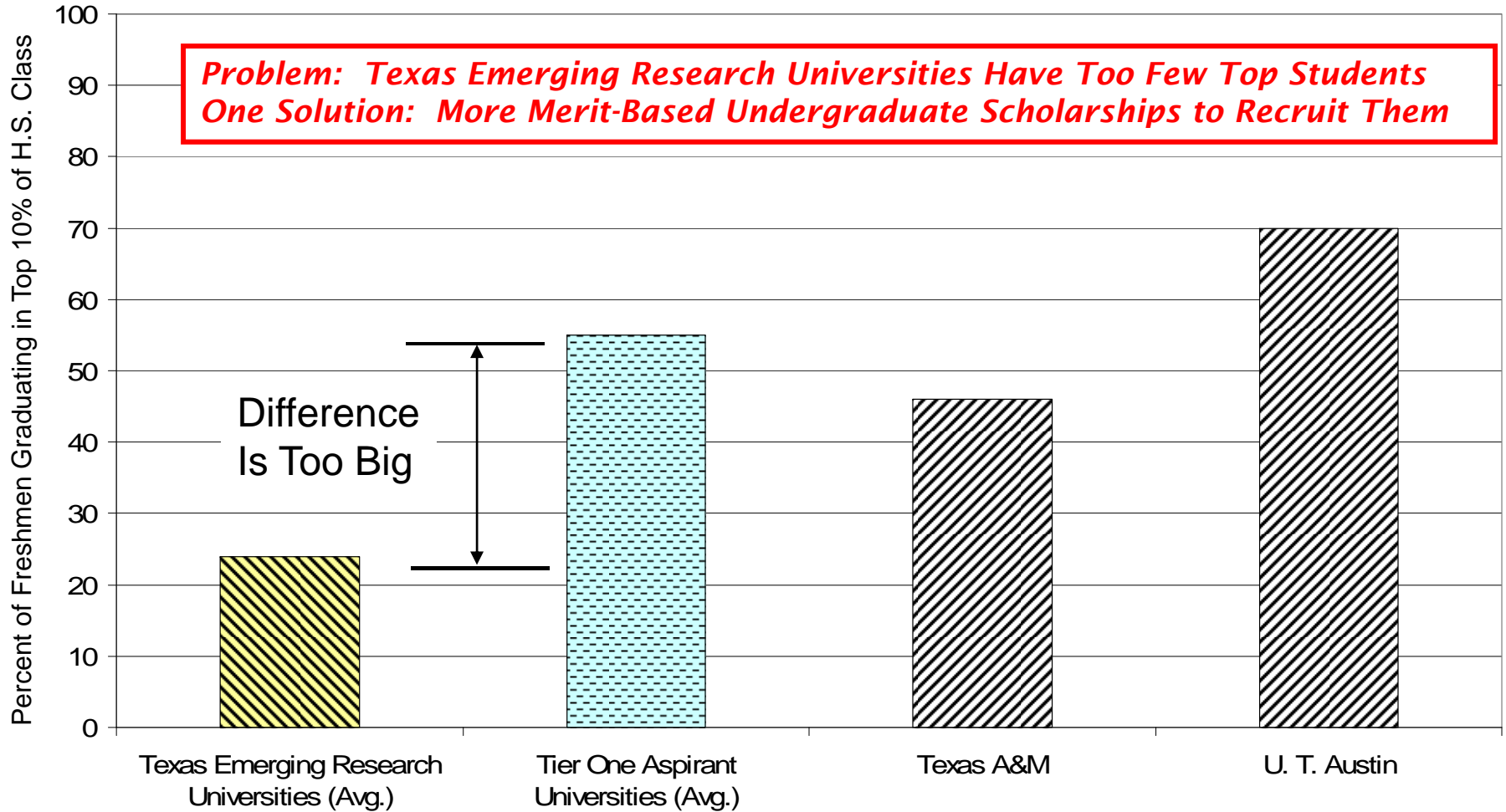
State	New NAE Members	New NAS Members	Total	Percent of Total
California	25	22	47	34 %
Massachusetts	11	15	26	19 %
New York	3	6	9	7%
Texas	2	4	6	4%
All Other States	24	25	49	36%
TOTAL	65	72	137	100%

Results of 2008 Elections for National Academy of Sciences (NAS) and National Academy of Engineering (NAE)

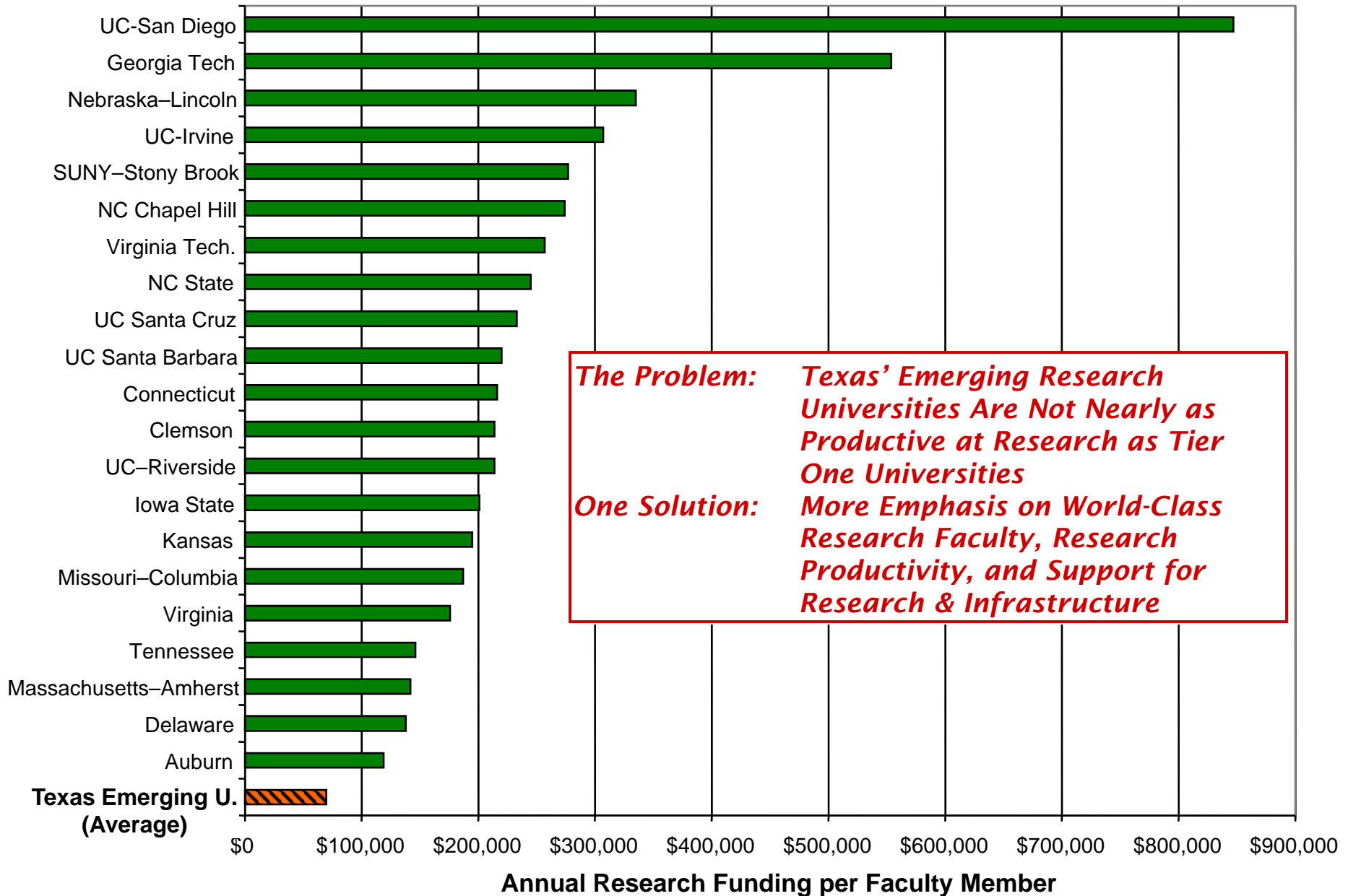
Key Attributes of a Tier One University

1. Undergraduate student quality – indicators include:
 - Top 10% students
 - SAT scores
 - National merit scholars
2. Quality and scope of graduate programs
 - Number of PhD degrees awarded
 - Program Rankings
3. Faculty quality – indicators include:
 - Faculty elected to one of the National Academies
4. External Research Expenditures – indicators include:
 - Total funding per year
 - Funding per faculty member per year
5. Alignment with other resources (industry, people, agriculture, medical school, community support, etc.)

An Example of a Tier One Challenge: Undergraduate Student Quality



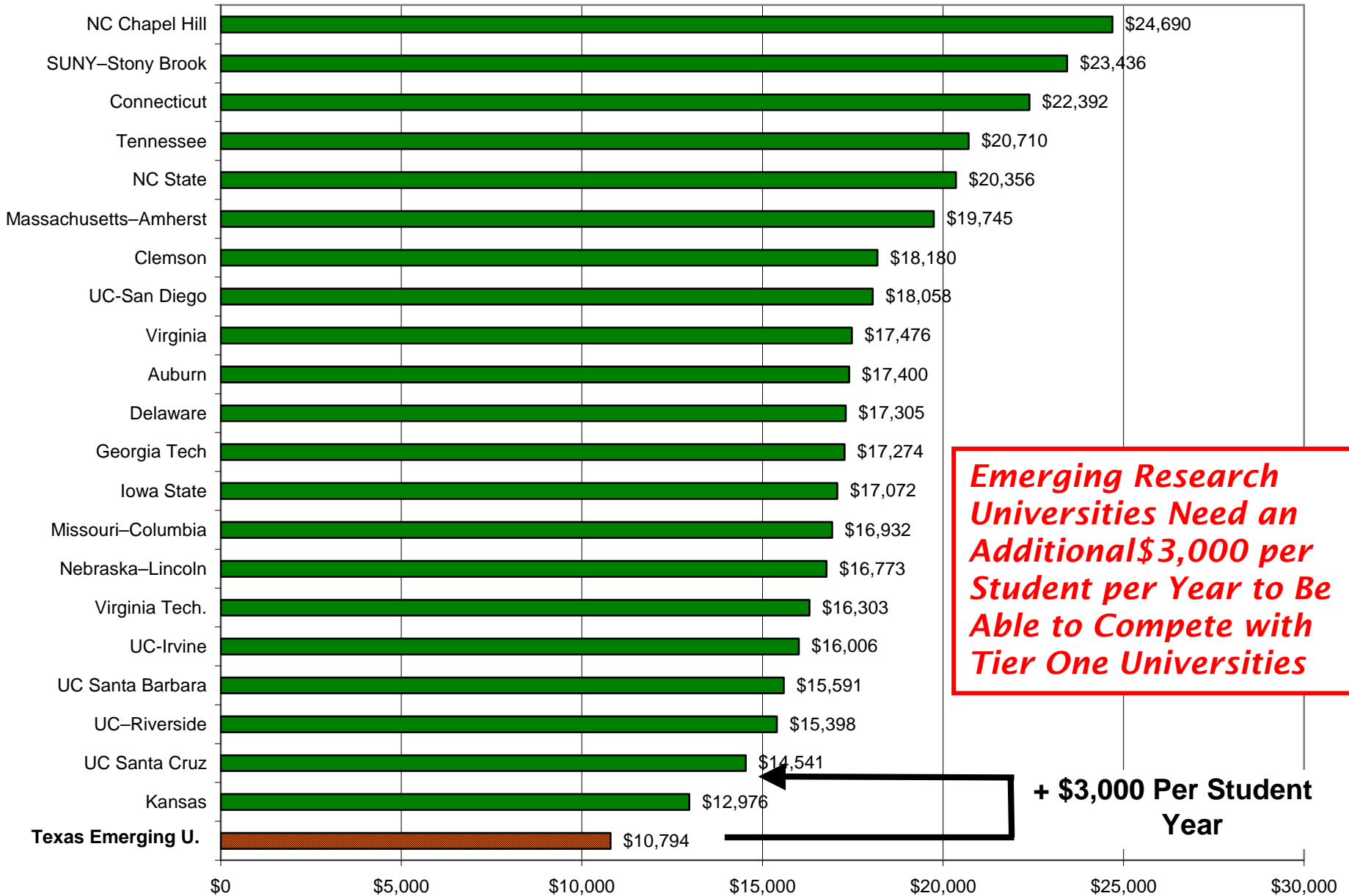
Tier One Challenge: Research Productivity per Faculty Member



Source: Research funding: National Science Foundation, all research expenditures for 2005-06 academic year

Number of FTE faculty members: U.S. Department of Education/ IPEDS Enrollment Report and Finance Report for FY2005-06

The Cost: Total Funding (State+Tuition) Per Student Per Year



Suggested Approach – To Start a Dialogue!

1. Suggest an incentive program that includes all 7 Texas emerging research universities – two types of incentives:
 - A. Matching funds for gifts and community support:
 - Student scholarships and fellowships
 - Endowed faculty professorships and chairs
 - Research support (programs, infrastructure)
 - Pipeline programs for at-risk students and critical fields
 - B. Incentive funds for creating a Tier-One profile:
 - Research funding per faculty member
 - Exceptional faculty (National Academy members)
 - Research education for undergraduates

Suggested Approach (continued)

2. Universities would use state funds to pay for the actions necessary to become a Tier One University, e.g., hire more research faculty & support research infrastructure
3. To be effective, state funding must be reasonably steady
 - suggest performance criteria be averaged over 2 years
 - Suggested program assumes that a small set of universities will be more successful in meeting the incentive criteria than the others, but all emerging research universities would be eligible to participate
 - The cost to elevate one emerging research university (average size of 22,000+ students) = \$70 M per year
 - Suggest elevating at least 2 to 3 emerging research universities – eventual cost is \$140 M to \$210 M per year

Summary

1. Texas needs more Tier One Universities and is paying a price in lost financial opportunity, top talent, and brain drain
2. State funding alone will not be enough to make a Tier One university
3. This proposed program would attract local and national attention --
 - Huge incentive that will increase gifts and endowments
 - Fuel private investment in research capacity
 - Stop the brain drain of students leaving the state
 - Bring more top scientists and engineers to Texas
 - Bring more Federal R&D dollars to Texas
 - Bring more venture capital investment to Texas
 - New discoveries would benefit Texans
 - Addresses need for Texans to have access to more top quality national research universities