TheCenter Top American Research Universities: An Overview

Diane D. Craig

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Presented at the 3rd International Conference on Quantitative Evaluation of Research Performers. Dalian University of Technology, Dalian, China, August 6, 2001.[1]

What is *TheCenter*?

Formed in 1998, The Center for Studies in the Humanities and Social Sciences (*TheCenter*) is a continuation of a decade-long effort by University of Florida (UF) administrators to develop methods for measuring and improving university performance.

John V. Lombardi, former UF president and Professor of History, serves as *TheCenter* director and lead author of *The Top American Research Universities*. Elizabeth D. Capaldi, former UF provost and Professor of Psychology, is currently provost at the University at Buffalo and plays an active role in *TheCenter* projects. Other authors include Diane D. Craig, Project Director; Denise S. Gater, Associate Director of University of Florida Office of Institutional Research; and, Sarah M. Mendonca, recent University of Florida Ph.D. graduate.

TheCenter staff believes data are a powerful management tool, when combined with incentives and rewards for good performance. However, it is difficult to know where one needs to improve without some type of reliable measurement system. Measuring and tracking performance over time requires a good, stable data set. While commercial rankings may be interesting, they are not very useful for university administrators because of instability in the methodology from year to year. *TheCenter* provides valid and reliable information to other universities by taking readily available data from nationally recognized and respected sources, and ensuring it is comparable across institutions.

The University of Florida Bank is an excellent example of how valuable and powerful good data collection and a strong incentive structure can be. Lombardi and Capaldi developed this performance-based budgeting method to guide improvement at the UF during the 1990s. The Bank collected data for each of the academic units on campus and rewarded them for increased productivity in research or teaching, and for improvement in these areas relative to their top peers in the country. The effectiveness of these techniques brought national attention and a commitment to translate the methodology from the particular implementation at one university to a general set of techniques applicable to any university or other non-profit or governmental entity.

The Top American Research Universities vs. Other College Rankings

There is a growing trend for researchers, institutions, donors, boards of trustees, and governments to use various university rankings as a means of measuring the performance of major higher education institutions. Universities find various ways to rank their performance, and many books and publications prosper by telling us which institutions are the ten best, the top 100, the best 50. Most national research universities measure themselves on a wide range of dimensions that the institution believes important for determining improvement and success. At the same time, no single indicator or composite number can represent what an individual institution has done, can do, or will do. To improve the quality and productivity of a major national research university, its faculty, students, staff, and supporters need to follow a number of

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[1] Presentation draws on the work of *TheCenter*, published in 2000 and 2001. Lombardi, John V., Diane D. Craig, Elizabeth D. Capaldi, and Denise S. Gater. *The Top American Research Universities*. Gainesville, FL: TheCenter. <http://thec enter.ufl.edu/research2000.pdf> <http://thecenter.ufl.edu/research2001.pdf>

indicators that, taken together, give a reasonable approximation of accomplishment and strength relative to the best universities in the country.

A number of college rankings provide this type of information, most notably *US News & World Report*'s guidebook, *America's Best Colleges*.

The Top American Research Universities differs from *US News* and other similar college rankings in many ways. First, it is not a commercial product; there is nothing "for sale." The goal of *US News* is to sell magazines. Change sells magazines even though universities and colleges do not change much from year to year. As a result, changes in *US News* rankings are often due to inclusion of a new measure, a change in how a measure is calculated, or an adjustment in the weighting scheme. Because of the variation each year, these data do not allow institutions to measure their performance over time. *TheCenter* uses the same nine indicators each year and does not weight the data.

US News includes a component called Academic Reputation which accounts for 25 percent of the institution's total score—the single most important factor in their rankings. The reputation score is obtained by sending a survey to university presidents, provosts (i.e., chief academic officers), and admissions deans and asking them to rate peer institutions' undergraduate academic programs on a scale from 1 (marginal) to 5 (distinguished). As one official proclaimed, "I know enough to comfortably rate about ten schools, but after that it is simply based upon past impressions from one or two people I have met, or it may just be a general feeling that I have about the institution." This general feeling may reflect long-held beliefs about an institution that no longer hold true today. Just as universities change slowly over time, so do perceptions of those universities. This leaves up and coming institutions at a distinct disadvantage.

Overall, it is difficult to manipulate the data used by *TheCenter* in its study. The institutions themselves report the research expenditure data, which the federal agency collection the data, the National Science Foundation (NSF), reviews. The data are also crosschecked against the federal obligations data that is reported by the various federal agencies that provide research funding to universities. Institutions report data on annual giving and endowment assets to alumni and in audited financial statements so the risks are high for falsifying information. Measures of faculty quality come directly from the membership rolls, press releases, and awards lists. The state and federal governments monitor degree information. Institutions can manipulate Median SAT scores by what student base is being used or admission policies, but generally everyone is doing the same manipulations so it probably does not distort significantly the result.

Unlike commercial rankings, *TheCenter* does not provide an overall rank for the institutions in the study because we do not believe such fine distinctions exist. Rank ordering gives the false impression that the precise order of institutions reflects precise differences. Instead, *TheCenter* groups together universities that perform well on a similar number of measures.

TheCenter provides data primarily for the benefit of university administrators and institutional researchers, and the media—those who want to compare institutions or look at a university performance over time. For *US News* and other commercial rankings, the primary audience is parents and their college-bound children. *TheCenter*'s focus on research universities is not as useful to undergraduates looking for a college to attend. It is more useful to graduate students as is evident from the large number of inquiries we receive from them, particularly foreign students.

TheCenter Data vs. Raw Data

The raw data used for *TheCenter* Top American Research Universities project, obtained from federal agencies and national organizations, often contain information on single campus institutions, multiple campus institutions, and state university systems, but without clearly identifying the distinctions. This makes national comparisons difficult and unreliable.

There are several types of university structures and a multitude of ways in which they can report their data. Some institutions reside within a state system with other institutions. Some are one institution but have distinct campuses that have separate organizational structures and administrators and are geographically distant from one another (Indiana University, Pennsylvania

State University). Some schools that belong to a state university system always report their data for just their own campus (University of Florida, University of North Carolina-Chapel Hill). Others are in a state university system and report some or all of their data for the system rather than the individual campuses (University of Colorado, Louisiana State University). In many cases, multiple campus institutions do not need to provide data by campus because the main campus conducts the vast majority of research and graduate education. However, in cases where another campus of the same university or system is a medical institution, it makes a significant difference (University of Nebraska, University of Kansas, Indiana University, Penn State).

TheCenter, to increase the validity and usefulness of these data, adjusts the reported figures, when necessary, to ensure that all data represent the strength of a single campus institution. Given *TheCenter*'s belief that good data can be used to manage and improve a university, it is critical that the data always represent what resources are available to a particular institution and what quality exists at a particular institution. *TheCenter* includes detailed methodological notes in its publication and web version that outline the various adjustments made.
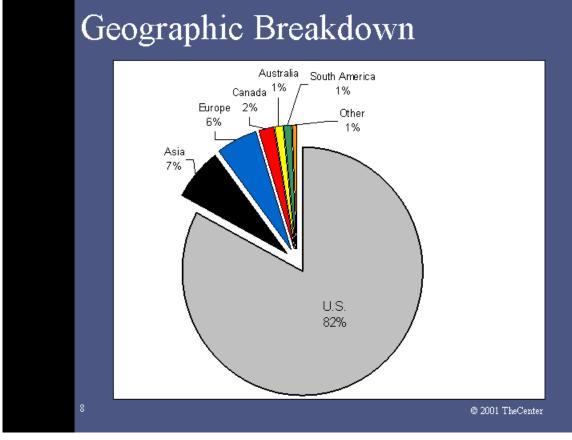
Other unique elements about *TheCenter* data increase its value to others. *TheCenter* replaces missing data with an estimate or substitute figure from another source. Because we use only a small number of indicators in the study, this is manageable. We rank Institutions on each of the measures among their public or private peers (control rank) and among all institutions regardless of their ownership control (national rank). Most raw data only provide the national rank and do not easily distinguish public versus private universities. Moreover, these original rankings may not provide as complete a picture because of missing data for a key institution.

TheCenter's online American Research University Data provides a comprehensive set of data on over 600 institutions. All of the data developed for this project is in downloadable Excel spreadsheet form because different observers will have different interests or want to construct alternative analyses.

Distribution of and Response to the Publication

The popularity of *TheCenter*'s data and publication, *The Top American Research Universities*, is evident from the statistics we have collected. The first report was mailed in July 2000 to two thousand individuals—university and college presidents, provosts, librarians, the media, government officials, and other individuals. On request, we mailed an additional 1,200 copies. Some institutions ordered 30, 50, or even 100 copies. Institutions used the publication or strategic planning purposes, alumni or foundation board meetings, public relations, and institutional research. *TheCenter* received more than 300 inquiries via email, phone or mail.

TheCenter's website (http://*TheCenter*.ufl.edu) has also attracted considerable attention around the country and abroad. Since its inception in August 2000, the website has had 57,000 unique visitors to its home page. The site generates an average of 4,700 unique hits per month, although interest has been on the rise in recent months as we are about to release the second annual study. Nearly one-fifth of the visitors to the site come from overseas, with more than 100 countries represented. Looking at individual countries, Singapore is the third largest visitor after Canada and the United States, followed by Japan and the United Kingdom. About 50 unique visitors came from China. (Chart 1)

Geographic Breakdown

Chart 1

The Top American Research Universities: The Nine Measures

The purpose of *The Top American Research Universities* study is to chart the comparative performance of research universities. No available data can accurately capture the totality of a university's quality and productivity. Nor can they measure the complete performance of these complex and diverse institutions. At the same time, some measures provide quite reliable indicators of institutional performance, even when they do not capture all of that performance.

We believe the very best colleges and universities compete at the top levels of most everything they do. The task for these institutions is to improve, measured by what they did last year and by comparison to what their competitors achieved during the same period.

Any number of indicators serves this purpose, but most observers of high quality American universities know that research matters more than anything else in defining the best institutions. In this study, *TheCenter* includes both the **total research and development** expenditures and the highly competitive **federally sponsored research and development** expenditures as indicators of research scale. The National Science Foundation (NSF) provides these data, which reflect only science and engineering fields. However, expenditures in non-science and engineering fields (e.g., education, journalism, law, business, and fine arts) are relatively small. Together, these two indicators serve as an institution's commitment to and success in research.

While the dollars give a good approximation of research activity, the faculty provide the critical resource for university success. *TheCenter* reports the number of **members of the National Academies** among an institution's faculty along with the number of **prestigious faculty awards** earned as indicators of faculty distinction. National Academy members are those faculty who have been elected to the highly selective and prestigious National Academy of Sciences, National Academy of Engineering or Institute of Medicine. Each year we check to see if members have changed institutions or have gone inactive. Member rolls are on web and updated each

election. For faculty awards, we use about two-dozen highly regarded award, scholarship and grant programs, representing the arts and humanities, science, engineering and health fields. If a multi-year award or fellowship, we only credit it to the faculty member in the year of the initial reward. These two measures give an indication of both the quality of the faculty and the institution's success in attracting them.

Students provide a double indicator by reflecting both the externally perceived quality of the institution and providing with their own credentials an important contribution to that quality. For the graduate and research instructional dimension, *TheCenter* provides the number of **doctorates awarded** and the number of **postdoctoral appointments** supported; for the undergraduate quality, *TheCenter* offers median **SAT scores** as indicators of student competitiveness. Doctorates awarded are the number of Ph.D.s or Ed.D.s given out in one academic year, data are available through the US Department of Education's IPEDS surveys conducted annually. Postdoctoral appointees, or postdocs, are individuals with science and engineering Ph.D.s, Medical, Dentistry or Veterinary Medicine degrees who devote most of their effort to their own research training under temporary appointments within academic departments. NSF collects the number of postdoctoral employees each year from any doctorate-granting institution that offers graduate programs in science, engineering or health fields.

Most institutions require entering freshmen to take the SAT or ACT entrance exam before acceptance. The SAT is more widely used than the ACT. Each institution reports their SAT verbal and math middle 50% range to The College Board guidebook. *TheCenter* then calculates a median score from those ranges. The best research universities spend a significant portion of revenue on the maintenance of high-quality undergraduate programs, and the median SAT score serves as an indicator of success in this competition.

Both private and public universities live on the resources generated from many sources, but critical to their success are the size of **endowment assets** and **annual giving**. Endowment reflects the long-term strength of accumulated private support that delivers an income to important purposes every year. Annual giving provides an indicator of the current level of an institution's private contributions both to current expenses and towards increased endowment. By including both indicators, *TheCenter* gains the opportunity to note historical and emerging strength in private support for research universities

 Endowment assets are funds that are pooled, representing several years' worth of gifts and donations, and a small portion of the interest generated each year from this pool goes to pay for specific things like faculty salaries or academic scholarships. Some universities like Harvard have built up enormous, multi-billion dollar endowment funds. Institutions report the market value of the endowment assets at the end of each fiscal year to several national organizations.

In contrast, annual giving includes only those contributions received in a particular year. It may be in the form of cash, securities, company products, or property, and come from alumni, individuals who are not alumni, corporations, foundations, or religious organizations. Institutions report annual giving to a RAND subsidiary called the Council for Aid to Education in their annual Voluntary Support of Education (VSE) survey.

TheCenter purposefully limits the number of indicators to nine because too many measures make it difficult to monitor, interpret, and manage. Many government accountability programs fail because they simply ask for too much information. The institutions providing the data are resentful because they spend a lot of time, money and effort collecting these data, and get little in return. If a university uses a large number of measures to evaluate performance, everyone will do well in some areas and poorly in others. When the final score appears there is little difference between the institutions. Thus, there is no real incentive to do better.

However, in addition to these nine key measures, *TheCenter* does offer an online data set with a variety of other measures that can aid in analysis—enrollment, composition of the student body, research discipline focus, and other data that can help give context to the main indicators of academic strength.

The Top American Research Universities: **The Tables**

A key feature of *The Top American Research Universities* report (available online and in print) is *TheCenter*'s classification of universities into groups based upon the nine quality indicators described above. To be included in this study, institutions must have more than $20 million in annual federal research expenditures.

Universities and colleges that rank within the top 25 on at least one of the nine measures fall into our definition of a top research university. Beginning with the 2001 report, we also present a second group of institutions: those ranking 26-50 on the same nine measures. The Top American Research University tables group the institutions by the number of indicators for which the institution ranks in the top 25 (or 26-50). The top group consists of those private or public universities that rank in the top twenty-five on all nine indicators included in this study, the second group includes those with eight indicators in the top twenty-five and so on. Within groups, the list is alphabetical. The tables display the top national universities (comparing all institutions regardless of whether they are publicly controlled or privately owned), as well as separately display the top public and the top private institutions.

TheCenter has no interest in rank ordering the universities included in this study. Indeed, the precise ranking of individual universities on each indicator tells less than the clustering of universities within groups. While this methodology will not solve the age-old problem of determining which is the "best" university in the country, it does give a reasonable approximation of which universities appear to be the strongest across a variety of different dimensions. (Tables 1 and Tables 2).

Top American Research Universities (1-25)

	Institutions in Order of Top 25 Score, then Top 26-50 Score, then Alphabetically	Number of Measures in Top 25 Nationally	Number of Measures in Top 26-50 Nationally	Research				Private Support			
				1999 *** Total Res. x $1000	Total Res. National Rank	1999 *** Fed. Res. x $1000	Fed. Res. National Rank	2000 *** Endow. Assets x $1000	Endow. National Rank	2000 *** Annual Giving x $1000	Giving National Rank
Private	Cornell	9	0	395,552	12	234,792	12	3,436,926	11	308,676	5
Private	Harvard	9	0	326,193	18	266,019	8	18,844,338	1	485,238	2
Private	MIT	9	0	420,306	9	308,921	5	6,475,506	5	238,426	12
Private	Stanford	9	0	426,549	8	353,947	3	8,649,475	3	580,474	1
Private	U of Pennsylvania	9	0	383,569	13	279,013	7	3,200,812	15	288,152	8
Private	Columbia	8	1	279,587	25	240,158	11	4,263,972	7	292,268	7
Private	Johns Hopkins	8	1	874,518	1	770,580	1	1,825,212	22	304,044	6
Private	Duke	8	0	348,274	16	186,757	21	2,663,891	17	407,953	3
Public	Berkeley	8	0	451,539	7	191,025	20	2,168,671	20	166,844	23
Public	U of Michigan - Ann Arbor	8	0	508,619	2	334,226	4	3,329,637	14	221,381	15
Public	U of Minnesota - Twin Cities	8	0	356,529	15	207,761	16	1,809,305	23	193,950	20
Public	UCLA	7	1	477,620	4	251,999	9	1,447,371	28	253,765	10
Private	U of Southern California	7	1	280,741	24	199,619	17	2,152,589	21	253,288	11
Public	U of Wisconsin - Madison	7	1	462,725	5	249,961	10	1,080,363	39	280,182	9
Public	U of Washington - Seattle	7	0	482,659	3	368,112	2	911,804	53	225,575	14
Private	Washington U	6	2	315,606	21	218,598	14	4,234,599	8	127,219	30
Private	Yale	6	2	274,050	26	213,404	15	10,084,900	2	358,103	4
Public	UC - San Francisco	6	0	417,095	10	233,181	13	912,258	52	218,320	16

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Table 1a

		Faculty				Advanced Training				Undergraduate	
Institutions in Order of Top 25 Score, then Top 26-50 Score, then Alphabetically		2000 *** Nat'l Academy	Nat'l Academy National Rank	2000 *** Faculty Awards	Faculty Awards National Rank	2000 *** Doctorates Granted	Doctorates National Rank	1999 *** Postdocs	Postdocs National Rank	1999 *** Median SAT	SAT National Rank
Private	Cornell	82	9	32	12	468	18	607	11	1365	24
Private	Harvard	247	1	61	1	602	8	3291	1	1495	2
Private	MIT	236	3	33	10	475	17	498	17	1475	4
Private	Stanford	239	2	54	3	589	10	1242	2	1455	6
Private	U of Pennsylvania	87	8	42	5	427	23	917	8	1400	13
Private	Columbia	75	10	38	6	461	20	352	27	1370	22
Private	Johns Hopkins	65	14	35	8	351	32	1239	3	1385	18
Private	Duke	40	22	31	14	230	63	571	13	1400	13
Public	Berkeley	190	4	59	2	756	1	933	7	1315	52
Public	U of Michigan - Ann Arbor	60	17	32	12	629	4	728	10	1270	77
Public	U of Minnesota - Twin Cities	36	23	31	14	604	7	518	16	1185	182
Public	UCLA	61	16	51	4	606	6	851	9	1285	70
Private	U of Southern California	34	25	19	29	481	16	558	15	1265	84
Public	U of Wisconsin - Madison	68	13	25	25	729	2	440	20	1195	164
Public	U of Washington - Seattle	71	12	37	7	486	15	1057	5	1160	224
Private	Washington U	35	24	30	17	199	72	582	12	1355	29
Private	Yale	101	5	28	20	334	34	206	62	1465	5
Public	UC - San Francisco	64	15	31	14	77	155	1117	4	NA	

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Table 1b and Table 1c

				Research				Private Support			
Institutions in Order of Top 25 Score, then Top 26-50 Score, then Alphabetically		Number of Measures in Top 25 Nationally	Number of Measures in Top 26-50 Nationally	1999 *** Total Res x $1000	Total Res. National Rank	1999 *** Fed. Res. x $1000	Fed. Res. National Rank	2000 *** Endow. Assets x $1000	Endow. National Rank	2000 *** Annual Giving x $1000	Giving National Rank
Private	U of Chicago	5	3	162,805	52	135,720	33	3,828,664	10	177,619	21
Public	U of No. Carolina - Chapel Hill	5	3	252,767	32	182,935	23	1,105,254	38	164,640	25
Private	Princeton U	5	2	124,237	75	72,974	69	8,398,100	4	166,189	24
Public	UC - San Diego	5	2	461,632	6	292,007	6	292,730	150	112,792	36
Public	U of Texas - Austin	5	2	258,122	30	164,913	27	1,611,050	25	201,637	18
Public	U of Illinois - Urbana	5	1	358,247	14	185,767	22	585,879	79	107,504	39
Private	Northwestern	4	5	233,809	35	132,647	37	3,368,233	13	203,069	17
Private	California Tech	4	4	212,216	38	195,303	18	1,535,702	27	117,561	33
Public	Ohio State	3	4	322,810	19	135,216	34	1,294,923	33	174,329	22
Public	Texas A&M	3	4	402,203	11	149,151	28	3,932,469	9	110,426	37
Public	U of Arizona	3	4	320,245	20	178,126	24	285,356	153	91,711	49
Public	U of Florida	3	4	304,447	23	122,296	41	681,370	70	163,600	26
Public	U of Virginia	3	4	157,487	55	108,495	46	1,738,984	24	195,284	19
Public	Penn State	3	3	333,874	17	175,212	25	781,038	62	125,958	31
Public	U of Pittsburgh - Pittsburgh	2	4	249,477	33	194,618	19	1,018,015	44	82,030	56
Private	Vanderbilt	2	3	149,675	61	116,887	42	2,314,935	19	94,181	45
Private	Dartmouth	2	2	69,522	115	46,741	97	2,490,376	18	116,128	34
Private	Rice	2	1	41,069	150	35,012	111	3,372,458	12	73,651	61

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Top American Research Universities (1-25)
(continued)

		Faculty				Advanced Training				Undergraduate	
	Institutions in Order of Top 25 Score, then Top 26-50 Score, then Alphabetically	2000 *** Nat'l Academy	Nat'l Academy National Rank	2000 *** Faculty Awards	Faculty Awards National Rank	2000 *** Doctorates Granted	Doctorates National Rank	1999 *** Postdocs	Postdocs National Rank	1999 *** Median SAT	SAT National Rank
Private	U of Chicago	60	17	35	8	391	28	348	29	1390	16
Public	U of No. Carolina - Chapel Hill	33	26	29	18	425	24	568	14	1245	104
Private	Princeton U	73	11	28	20	279	45	315	33	1450	7
Public	UC - San Diego	91	7	29	18	294	41	968	6	1180	185
Public	U of Texas - Austin	52	20	28	20	659	3	246	52	1195	164
Public	U of Illinois - Urbana	53	19	33	10	597	9	246	52	1250	98
Private	Northwestern	31	28	27	23	321	35	249	50	1370	22
Private	California Tech	93	6	14	46	127	104	497	18	1515	1
Public	Ohio State	13	54	19	29	620	5	264	44	1140	283
Public	Texas A&M	15	50	11	61	490	14	267	43	1180	185
Public	U of Arizona	27	30	18	36	405	26	451	19	1100	421
Public	U of Florida	17	46	27	23	516	12	344	30	1265	84
Public	U of Virginia	22	35	25	25	343	33	339	31	1310	58
Public	Penn State	22	35	16	39	513	13	246	52	1205	146
Public	U of Pittsburgh - Pittsburgh	17	46	11	61	316	37	432	21	1145	267
Private	Vanderbilt	11	58	18	36	190	74	406	22	1310	58
Private	Dartmouth	15	50	13	52	38	228	115	90	1440	8
Private	Rice	19	42	8	81	115	118	118	89	1415	11

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Table 1d and Table 1e

Top American Research Universities (1-25)
(continued)

				Research				Private Support			
	Institutions in Order of Top 25 Score, then Top 26-50 Score, then Alphabetically	Number of Measures in Top 25 Nationally	Number of Measures in Top 26-50 Nationally	1999 *** Total Res. x $1000	Total Res. National Rank	1999 *** Fed. Res. x $1000	Fed. Res. National Rank	2000 *** Endow. Assets x $1000	Endow. National Rank	2000 *** Annual Giving x $1000	Giving National Rank
Private	New York	1	8	167,179	49	111,124	45	1,030,800	43	236,620	13
Private	Baylor College of Medicine	1	4	272,198	27	141,111	30	1,044,685	41	92,078	48
Private	Emory	1	4	189,170	42	132,816	36	5,032,683	6	101,430	41
Public	Michigan State	1	4	207,912	39	89,835	56	310,289	140	121,287	32
Public	Purdue U - West Lafayette	1	4	226,411	37	95,708	51	1,301,976	32	84,358	53
Public	UC - Davis	1	4	307,950	22	124,463	38	395,346	110	76,768	58
Private	Brown University	1	3	76,330	109	45,276	100	1,416,052	29	93,077	46
Public	U of Maryland - College Park	1	3	257,628	31	145,081	29	319,061	135	56,119	83
Private	Carnegie Mellon	1	2	142,174	65	90,408	55	829,121	59	71,671	64
Private	Rockefeller	1	2	121,519	77	45,010	101	1,372,200	30	60,179	76
Private	Notre Dame	1	2	30,483	165	23,614	143	3,089,007	16	140,679	28
Public	Indiana U - Bloomington	1	1	77,916	108	40,905	105	499,105	85	100,797	42
Public	U at Stony Brook	1	1	148,982	63	93,937	52	38,145	491	20,080	198
Private	Yeshiva	1	0	111,771	81	89,680	57	775,262	63	41,299	105

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Top American Research Universities (1-25)
(continued)

	Institutions in Order of Top 25 Score, then Top 26-50 Score, then Alphabetically	Faculty				Advanced Training				Undergraduate	
		2000 *** Nat'l Academy	Nat'l Academy National Rank	2000 *** Faculty Awards	Faculty Awards National Rank	2000 *** Doctorates Granted	Doctorates National Rank	1999 *** Postdocs	Postdocs National Rank	1999 *** Median SAT	SAT National Rank
Private	New York	30	29	22	27	402	27	293	36	1325	47
Private	Baylor College of Medicine	12	55	13	52	61	179	394	25	NA	
Private	Emory	9	66	10	69	160	86	200	66	1340	36
Public	Michigan State	6	78	15	42	444	22	258	47	1110	377
Public	Purdue U - West Lafayette	17	46	19	29	468	18	228	58	1100	421
Public	UC - Davis	25	32	19	29	357	30	204	63	1170	204
Private	Brown University	17	46	11	61	149	94	187	67	1390	16
Public	U of Maryland - College Park	18	44	12	58	461	20	220	60	1240	110
Private	Carnegie Mellon	22	35	14	46	152	92	144	79	1365	24
Private	Rockefeller	43	21	10	69	19	312	275	40	NA	
Private	Notre Dame	2	112	13	52	147	95	96	102	1345	35
Public	Indiana U - Bloomington	10	62	11	61	409	25	143	80	1095	444
Public	U at Stony Brook	12	55	17	38	244	58	400	23	1120	351
Private	Yeshiva	9	66	5	111	126	105	400	23	1190	172

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Table 1f and Table 2a

Top American Research Universities (26-50)

	Institutions in Order of Top 26-50 Score (Alphabetically within Group)	No. of Measures in Top 26-50	Research				Private Support			
			1999 *** Total Res. x $1000	Total Res. National Rank	1999 *** Federal Research x $1000	Fed. Res. National Rank	2000 *** Endow. Assets x $1000	Endow. National Rank	2000 *** Annual Giving x $1000	Giving National Rank
Private	Case Western Reserve	7	182,332	44	140,178	32	1,550,600	26	109,933	38
Public	Georgia Tech	7	263,725	29	112,861	43	1,141,666	36	107,465	40
Public	U of Colorado - Boulder	6	184,237	43	140,959	31	238,960	173	57,284	81
Private	U of Rochester	6	177,126	45	112,852	35	1,278,774	34	84,091	71
Public	U of Iowa	5	207,135	40	122,638	40	424,159	100	83,894	54
Public	U of Utah	5	153,843	58	111,716	44	317,268	135	144,018	27
Private	Boston U	4	141,102	67	123,390	39	913,207	50	73,428	62
Public	North Carolina State U	4	270,621	28	66,310	73	332,840	139	74,363	59
Public	Rutgers University - New Brunswick	4	190,316	41	67,341	72	400,259	108	73,945	60
Public	U of Alabama - Birmingham	4	232,115	36	165,223	26	228,740	179	58,864	82
Public	U of Texas SW Medical Ctr - Dallas	4	185,520	51	101,996	47	733,253	88	115,033	35
Public	U at Buffalo	3	188,823	50	85,490	59	447,322	95	28,287	148
Public	U of Illinois - Chicago	3	175,093	46	86,406	58	119,007	285	38,509	114

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Top American Research Universities (26-50)
(continued)

	Institutions in Order of Top 26-50 Score (Alphabetically within Group)	Faculty				Advanced Training				Undergraduate	
		2000 *** Nat'l Academy Members	National Academy Nat'l Rank	2000 *** Faculty Awards	Faculty Awards National Rank	2000 *** Doctorates Granted	Doctorates National Rank	1999 *** Postdocs	Postdocs National Rank	1999 *** Median SAT	SAT National Rank
Private	Case Western Reserve	23	34	6	92	202	69	149	28	1110	44
Public	Georgia Tech	22	35	15	42	230	63	0	264	1320	48
Public	U of Colorado - Boulder	24	33	15	42	266	50	274	41	1160	224
Private	U of Rochester	20	41	12	58	211	67	268	42	1320	48
Public	U of Iowa	18	44	11	61	317	36	279	39	1190	172
Public	U of Utah	19	42	19	29	215	66	295	35	1110	317
Private	Boston U	14	53	20	28	274	49	181	70	1270	77
Public	North Carolina State U	15	50	14	46	318	37	203	64	1175	198
Public	Rutgers University - New Brunswick	26	31	19	29	371	29	151	78	1205	146
Public	U of Alabama - Birmingham	9	66	15	42	125	107	280	38	1010	799
Public	U of Texas SW Medical Ctr - Dallas	22	35	19	29	55	192	229	57	NA	
Public	U at Buffalo	5	83	16	39	103	40	246	52	1110	377
Public	U of Illinois - Chicago	5	83	16	39	201	71	264	44	1070	520

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Table 2b and Table 2c

Top American Research Universities (26-50)
(continued)

	Institutions in Order of Top 26-50 Score (Alphabetically within Group)	No. of Measures in Top 26-50	Research				Private Support			
			1999 *** Total Res. x $1000	Total Res. National Rank	1999 *** Federal Research x $1000	Fed. Res. National Rank	2000 *** Endow. Assets x $1000	Endow. National Rank	2000 *** Annual Giving x $1000	Giving National Rank
Private	Brandeis	2	48,305	116	29,423	121	406,722	105	61,704	74
Private	Georgetown	2	111,426	82	83,972	63	745,398	64	92,817	47
Public	Indiana U-Purdue U - Indianapolis	2	116,874	78	61,157	77	381,134	116	90,718	50
Public	U of California - Irvine	2	141,842	66	75,505	66	128,738	268	67,254	69
Public	U of Cincinnati - Cincinnati	2	153,002	59	100,125	50	961,907	47	61,671	75
Public	U of Colorado Health Sciences Ctr	2	130,450	72	101,044	49	119,480	284	28,642	145
Public	U of Georgia	2	217,491	34	56,080	84	388,422	113	45,739	97
Public	U of Kentucky	2	174,034	47	66,184	74	370,125	120	48,382	93
Private	U of Miami	2	139,608	69	101,883	48	465,212	92	100,561	43
Public	Virginia Tech	2	169,250	48	75,386	67	368,197	121	55,610	84
Public	Arizona State U - Tempe	1	107,184	84	51,905	90	215,594	189	69,026	65
Public	Colorado State U	1	150,281	60	91,943	54	104,777	310	22,465	177
Public	Iowa State U	1	161,301	53	54,179	89	410,704	101	130,022	29
Public	Louisiana State U - Baton Rouge	1	158,672	54	37,291	107	189,813	203	33,400	128
Private	Saint Louis U - St. Louis	1	27,817	172	23,722	142	925,955	49	31,662	134
Private	Tufts	1	101,728	88	63,618	75	523,520	83	72,990	63
Public	U of California - Santa Barbara	1	104,561	87	74,026	68	85,866	341	24,111	168
Public	U of Connecticut - Storrs	1	75,592	111	23,863	140	125,638	271	31,755	133
Public	U of Kansas - Lawrence	1	73,831	112	33,176	115	684,362	69	62,793	73
Public	U of Massachusetts - Amherst	1	86,576	98	39,877	106	65,247	389	21,117	192
Public	U of Tennessee - Knoxville	1	101,717	89	44,920	102	258,000	164	48,004	94
Public	U of Texas MD Anderson Cancer Ctr	1	155,126	57	69,413	71	300,480	144	63,526	72
Public	U of Texas Med. Branch - Galveston	1	91,580	94	55,061	87	142,602	128	34,969	124
Private	Wake Forest	1	82,827	102	60,293	78	969,618	46	42,502	103

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Top American Research Universities (26-50)
(continued)

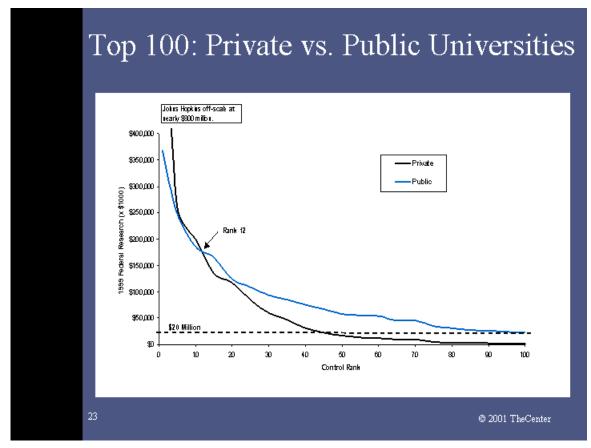| Institutions in Order of Top 26-50 Score (Alphabetically within Group)		No. of Measures in Top 26-50	Research				Private Support			
			1999 ••• Total Res. x $1000	Total Res. National Rank	1999 ••• Federal Research x $1000	Fed. Res. National Rank	2000 ••• Endow. Assets x $1000	Endow. National Rank	2000 ••• Annual Giving x $1000	Giving National Rank
Private	Brandeis	2	48,305	116	29,423	123	406,722	105	61,704	74
Private	Georgetown	2	111,426	82	83,972	63	745,398	64	92,837	47
Public	Indiana U-Purdue U - Indianapolis	2	116,874	78	61,357	77	381,134	116	90,718	50
Public	U of California - Irvine	2	141,842	66	75,505	66	128,738	268	67,254	69
Public	U of Cincinnati - Cincinnati	2	153,002	59	100,125	50	963,907	47	61,671	75
Public	U of Colorado Health Sciences Ctr	2	130,450	72	101,044	49	119,480	284	28,642	145
Public	U of Georgia	2	237,493	34	56,080	84	388,422	113	45,739	97
Public	U of Kentucky	2	174,034	47	66,184	74	370,125	120	48,382	93
Private	U of Miami	2	139,608	69	101,883	48	465,212	92	100,563	43
Public	Virginia Tech	2	169,250	48	75,386	67	368,197	121	55,610	84
Public	Arizona State U - Tempe	1	107,184	84	53,905	90	215,594	189	69,026	65
Public	Colorado State U	1	150,281	60	91,943	54	104,777	310	22,465	177
Public	Iowa State U	1	161,301	53	54,179	89	410,704	103	130,022	29
Public	Louisiana State U - Baton Rouge	1	158,672	54	37,291	107	189,813	203	33,400	128
Private	Saint Louis U - St. Louis	1	27,817	172	23,722	142	925,955	49	31,662	134
Private	Tufts	1	101,728	88	63,618	75	523,520	83	72,990	63
Public	U of California - Santa Barbara	1	104,561	87	74,026	68	85,866	341	24,111	168
Public	U of Connecticut - Storrs	1	75,592	111	23,863	140	125,638	273	31,755	133
Public	U of Kansas - Lawrence	1	73,831	112	33,176	115	684,362	69	62,793	73
Public	U of Massachusetts - Amherst	1	86,576	98	39,877	106	65,247	389	21,117	192
Public	U of Tennessee - Knoxville	1	101,717	89	44,920	102	258,000	164	48,004	94
Public	U of Texas MD Anderson Cancer Ctr	1	155,126	57	69,413	71	300,480	144	63,526	72
Public	U of Texas Med. Branch - Galveston	1	93,580	94	55,061	87	342,602	128	34,969	124
Private	Wake Forest	1	82,827	102	60,293	78	969,618	46	42,502	103

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Table 2d and Table 2e

Top American Research Universities (26-50)
(continued)

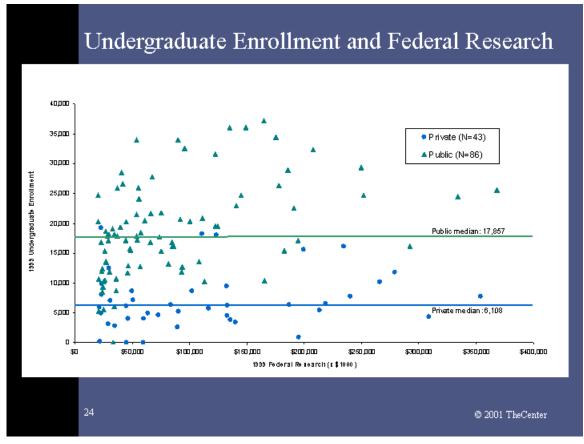| Institutions in Order of Top 26-50 Score (Alphabetically within Group)		Faculty				Advanced Training				Undergraduate	
		2000 ••• Nat'l Academy Members	National Academy Nat'l Rank	2000 ••• Faculty Awards	Faculty Awards National Rank	2000 ••• Doctorates Granted	Doctorates National Rank	1999 ••• Postdocs	Postdocs National Rank	1999 ••• Median SAT	SAT National Rank
Private	Brandeis	12	55	14	46	111	123	100	99	1320	48
Private	Georgetown	5	83	6	92	107	127	70	118	1350	31
Public	Indiana U-Purdue U - Indianapolis	5	83	4	131	43	219	255	48	945	1090
Public	U of California - Irvine	21	40	12	58	202	69	324	32	1145	267
Public	U of Cincinnati - Cincinnati	2	112	8	81	238	59	224	59	1050	612
Public	U of Colorado Health Sciences Ctr	7	72	9	73	44	216	285	37	NA	
Public	U of Georgia	8	71	11	61	352	31	179	71	1195	164
Public	U of Kentucky	4	96	14	46	249	55	186	68	1125	332
Private	U of Miami	11	112	3	158	176	80	138	84	1160	224
Public	Virginia Tech	11	58	7	85	309	39	108	94	1165	216
Public	Arizona State U - Tempe	7	100	11	61	286	42	75	112	1105	405
Public	Colorado State U	6	78	5	111	180	79	255	48	1130	317
Public	Iowa State U	7	72	8	92	238	59	179	71	1210	140
Public	Louisiana State U - Baton Rouge	1	112	10	69	275	47	72	116	1090	460
Private	Saint Louis U - St. Louis	1	112	0	517	123	108	38	147	1160	224
Private	Tufts	5	83	13	52	100	131	243	56	1340	36
Public	U of California - Santa Barbara	32	27	9	73	232	62	158	76	1185	182
Public	U of Connecticut - Storrs	1	112	8	81	275	47	59	126	1130	317
Public	U of Kansas - Lawrence	7	72	14	46	246	56	130	86	1110	377
Public	U of Massachusetts - Amherst	10	62	13	52	276	46	143	80	1135	302
Public	U of Tennessee - Knoxville	1	112	6	92	286	42	107	96	1100	421
Public	U of Texas MD Anderson Cancer Ctr	1	112	2	199	NA		392	26	NA	
Public	U of Texas Med. Branch - Galveston	2	112	1	283	35	241	263	46	NA	
Private	Wake Forest	2	112	2	199	28	270	96	102	1300	64

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TheCenter 2001 Report: Major Findings

Included in *The Top American Research Universities* report is an analytical section. This year *TheCenter* examined the variables that may influence an institution's ability to compete for federal research. The structure of the university does not appear to matter. We find among our top universities, representatives from all types of university systems and level of centralization. Ownership (public vs. private) does matter. Privates dominate the very top of the federal research market, but more public universities than publics are in the competition. A comparison of the top 100 privates and top 100 publics show the dramatic decline of private universities who are able to compete for federal research. The top 12 private universities outperform their top 12 public counterparts, but after rank 12 they consistently under perform compared to their similarly ranked public peers, dropping below the $20 million cutoff at around rank 45. (Chart 2)
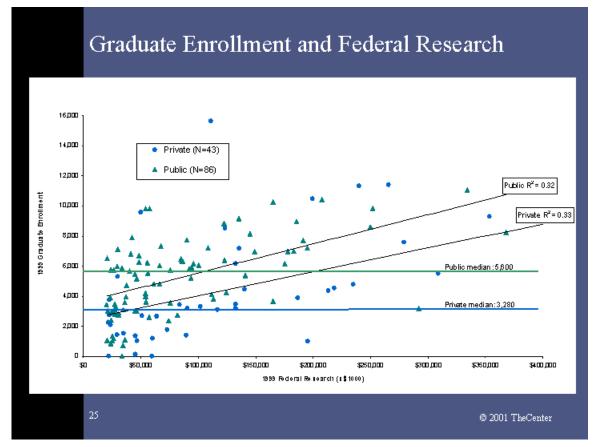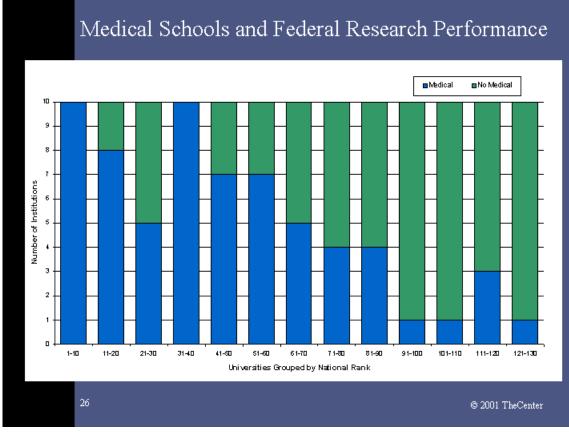

Chart 2

Some people argue that the top schools are at the top simply because they are big or because they have a medical school. The data suggest that size does matter to some degree, but much more for public than for private institutions. For size, we use student enrollment because accurate faculty size data are not available. The scatter plot displays undergraduate enrollment for universities with more than $20 million in federal research expenditures and excludes standalone medical schools. It clearly shows privates have smaller enrollments than do their public counterparts, but at the same time, it shows no simple linear relationship. Large and small institutions, private and public, appear at all levels of research performance. An additional perspective on the issue of enrollment involves the relationship between graduate enrollment and federal research. While the relationship is stronger, and similar among public and private institutions, this is as expected because some (but not all) graduate enrollment is simply a reflection of the size and capacity of an institution's research program. (Chart 3 and Chart 4).

Chart 3 and Chart 4

Medical schools help but do not guarantee success. Many medical institutions focus on turning out doctors and conduct very little research. The key contribution that a medical school makes to a research university is the surplus revenue it may generate to subsidize other research, namely high-quality biomedical and life science research. (Chart 5)

Chart 5

In short, research university success depends on many things done well and no institutional characteristics predict who will succeed in the research competition.
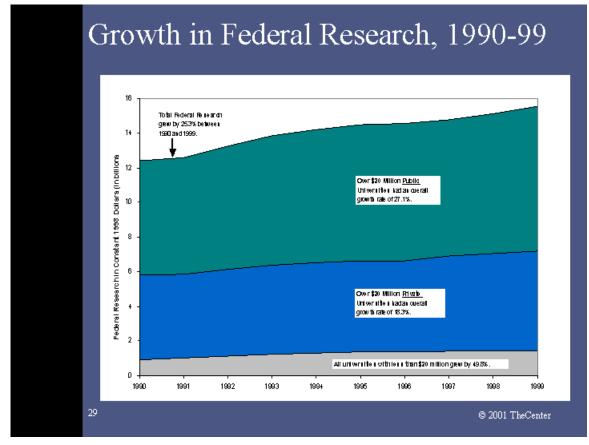
The Size Factor

Many university people have suggested *TheCenter* staff normalize the data using faculty size. As noted before, a major obstacle is the fact that there is no reliable source for research faculty counts. While all universities report various faculty numbers to national agencies and in response to a variety of surveys, the methodologies used to produce these data vary significantly by institution, making them extremely unreliable. This is described in detail in a paper available online at *TheCenter* website. If we could fully identify the full-time equivalent research faculty on a standard basis across institutions, our hypothesis predicts that this number would be an excellent predictor of research success.

Despite the lack of good faculty numbers, there is another problem with normalizing by faculty size. *TheCenter*'s focus is on the total institutional performance rather than the productivity of its faculty members. It may well be that a small university is, per capita, equally or more productive than a large university but if they do not have a significant market share and do not compete for large awards, it is hard to state that the institution as a whole is of higher quality. Per capita faculty productivity is a very different but important question. If valid and reliable faculty numbers are available in the future, this measure of productivity would be an additional piece of information and would not replace the current structure now in place.
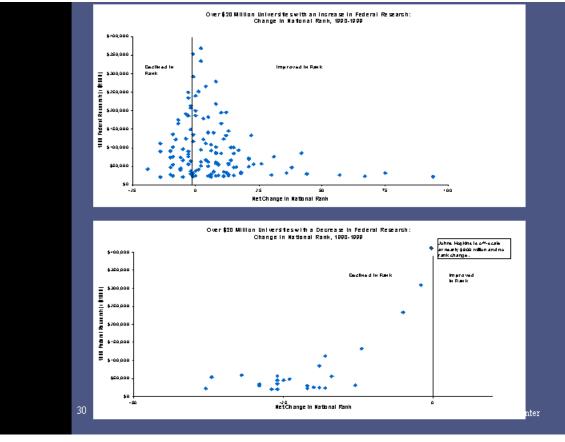
Change in Federal Research

     TheCenter also examined change in federal research over the past decade. Nationwide, federal research expenditures grew at a rate of 25.3% in constant 1998 dollars (i.e., adjusted for inflation) between 1990 and 1999.   As a group, public universities have performed better than private institutions in this competitive arena. (<u>Chart 6</u>).

Chart 6

     Improvement in rank does not always mean a corresponding increase in research dollars. Rank change depends upon what the institution does, as well as what its closest competitors do. Change in rank is greatest among those with the least research; there is little change among the top institutions. (<u>Chart 7</u>).

Chart 7

Conclusion

　　For all of the similarity in their organizational models, American research universities have many different strategies for success. No single characteristic appears to explain competitive achievement, but instead, the right combination of elements matched with an institution's resources and opportunities is what appears to drive the most successful institutions. To maintain or improve their competitiveness in these marketplaces, universities almost certainly need to understand the relationship between their investments in research and student support and the results they achieve. Some universities may be wealthy enough to avoid the discipline of measuring results, but most institutions are not. Our goal in The Top American Research Universities project is to provide useful data that present institutions within their competitive context as a tool for measuring and improving research university performance.