RESEARCH METRICS

Handful of U.S. Schools Claim Larger Share of Output

Quality attracts quality in academic research. But is that the best way to achieve economic prosperity?

A new analysis of the U.S. research base by Thomson Reuters points to an increasing concentration of academic research. The report, the latest in a series of such assessments of individual countries, examines both the share of scientific papers written by researchers at a particular institution and the impact of those papers, as measured by the average number of citations per publication.

Two dozen universities hold a combined 42% share of the overall U.S. output for the years 2005 to '09, the report finds (see first table). That's up from 31% during the 1981–85 period. That increased concentration has occurred at the same time the size of the overall pie has doubled, to roughly 1.6 million papers. Harvard University tops both lists, with a 4.2 share of that output, and its margin over second-place University of Michigan has widened in the past 30 years. The 61 U.S. members of the Association of American Universities (AAU) claim an outsized 56% share, up eight points.

Similarly, 19 universities received 47% of all citations to U.S. papers for 2005 to '09 (see second table). Papers from the Massachusetts Institute of Technology, which has been ranked first or second during the past 3 decades, have more than twice the impact as the world average. In addition, a handful of universities have maintained their dominance: Only six universities have held one of the top five places in the impact rankings since the 1980s.

PUBLICATION OUTPUT

Total papers 1981–1985	Share U.S. (%)	Institution	Total papers 2005–2009	Share U.S. (%)
469,201	48.5	AAU	905,522	56.1
25,630	2.65	Harvard University	68,146	4.22
13,071	1.35	University of Michigan System	33,084	2.05
10,567	1.09	Johns Hopkins University	31,503	1.95
16,941	1.75	University of California, Los Angeles	31,108	1.93
12,841	1.33	University of Washington System	30,320	1.88
13,366	1.38	Stanford University	28,318	1.75
10,248	1.06	University of California, San Diego	27,265	1.69
15,176	1.57	University of California, Berkeley	27,021	1.67
11,646	1.20	University of Pennsylvania	26,579	1.65
10,691	1.10	Columbia University	26,427	1.64
10,219	1.06	University of Maryland System	25,844	1.60
14,419	1.49	University of Minnesota System	25,497	1.58
13,919	1.44	University of Wisconsin, Madison	24,553	1.52
14,222	1.47	Cornell University	23,483	1.45
10,166	1.05	University of Florida	23,226	1.44
7,483	0.77	University of Pittsburgh	22,457	1.39
9,490	0.98	University of California, Davis	22,362	1.38
7,880	0.81	Duke University	21,954	1.36
8,715	0.90	Penn State University System	21,689	1.34
11,150	1.15	Yale University	21,676	1.34
8,792	0.91	Ohio State University	21,380	1.32
8,889	0.92	University of Colorado System	21,066	1.30
10,027	1.04	University of California, San Francisco	20,691	1.28
11,651	1.20	MIT	20,609	1.28
6,975	0.72	Texas A&M University System	19,432	1.20

CITATION OUTPUT

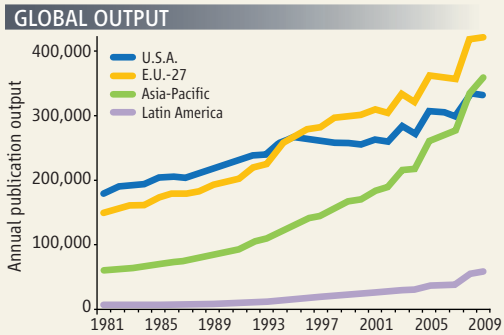
Institution	1981–85	1993–97	2005–09
MIT	2.14	2.16	2.28
Caltech	2.13	2.02	2.18
Princeton University	2.19	2.07	2.11
University of California, Santa Barbara	1.75	2.28	2.04
Stanford University	2.05	2.08	1.96
Harvard University	1.98	2.14	1.94
University of California, Berkeley	1.79	1.77	1.92
University of Colorado, Boulder	1.67	1.65	1.86
University of Chicago	1.98	1.92	1.85
University of Washington System	1.78	1.76	1.82
University of Pennsylvania	1.62	1.73	1.77
University of California, San Francisco	1.86	1.89	1.76
Johns Hopkins University	1.69	1.85	1.74
Columbia University	1.70	1.83	1.74
University of California, Los Angeles	1.62	1.61	1.74
Northwestern University	1.62	1.69	1.73
Boston University	1.35	1.59	1.71
Yale University	1.91	1.89	1.71
University of Rochester	1.46	1.60	1.71
U.S. UNIVERSITY average	1.37	1.40	1.37

The report also documents the growth by Asian and European nations in overall research productivity. It notes that the 27-member European Union surpassed the United States in 1995 and remains ahead, and that the Asian-Pacific countries did likewise for the first time in 2008 as part of their explosive growth (see first figure). It also finds that U.S. scientists work disproportionately in the health and social sciences when compared with the rest of the world (see second figure).

"In the United States you see a concentration by field, as well as by geography," says Jonathan Adams, co-author of the new report, who quickly adds, "I'm not saying it's a problem." But the report ends with this provocative question: Are the economic challenges facing the United States "best answered by such concentration, or does its response to the challenge of agile knowledge economies elsewhere in the world require an equally innovative response supported by a more pervasive network of U.S. institutions that draw on the talent spread across the 50 states?"

–JEFFREY MERVIS

GLOBAL OUTPUT



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