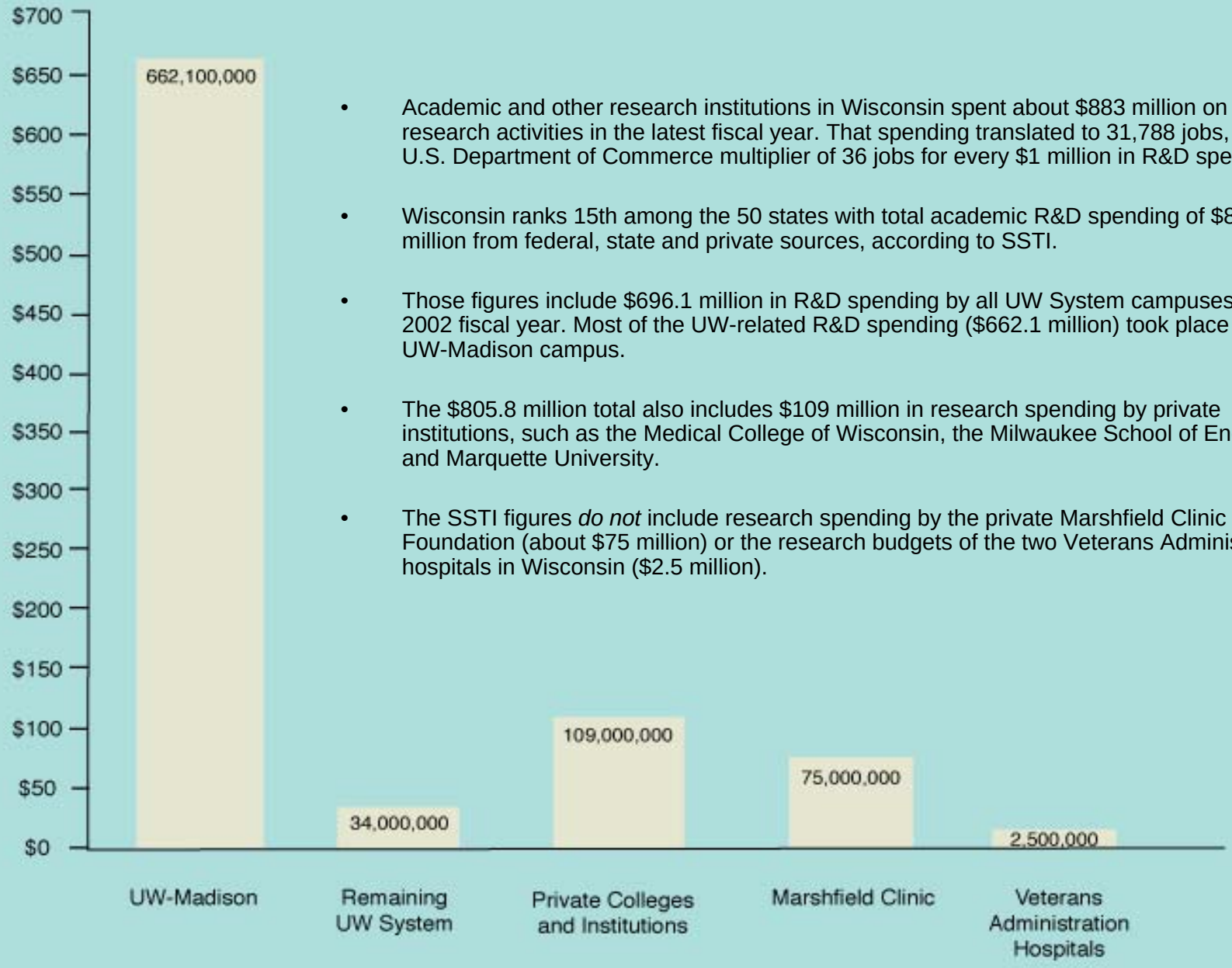
The Economic Value of Academic Research and Development in Wisconsin

Sources of Academic R&D Spending in Wisconsin

in millions of dollars



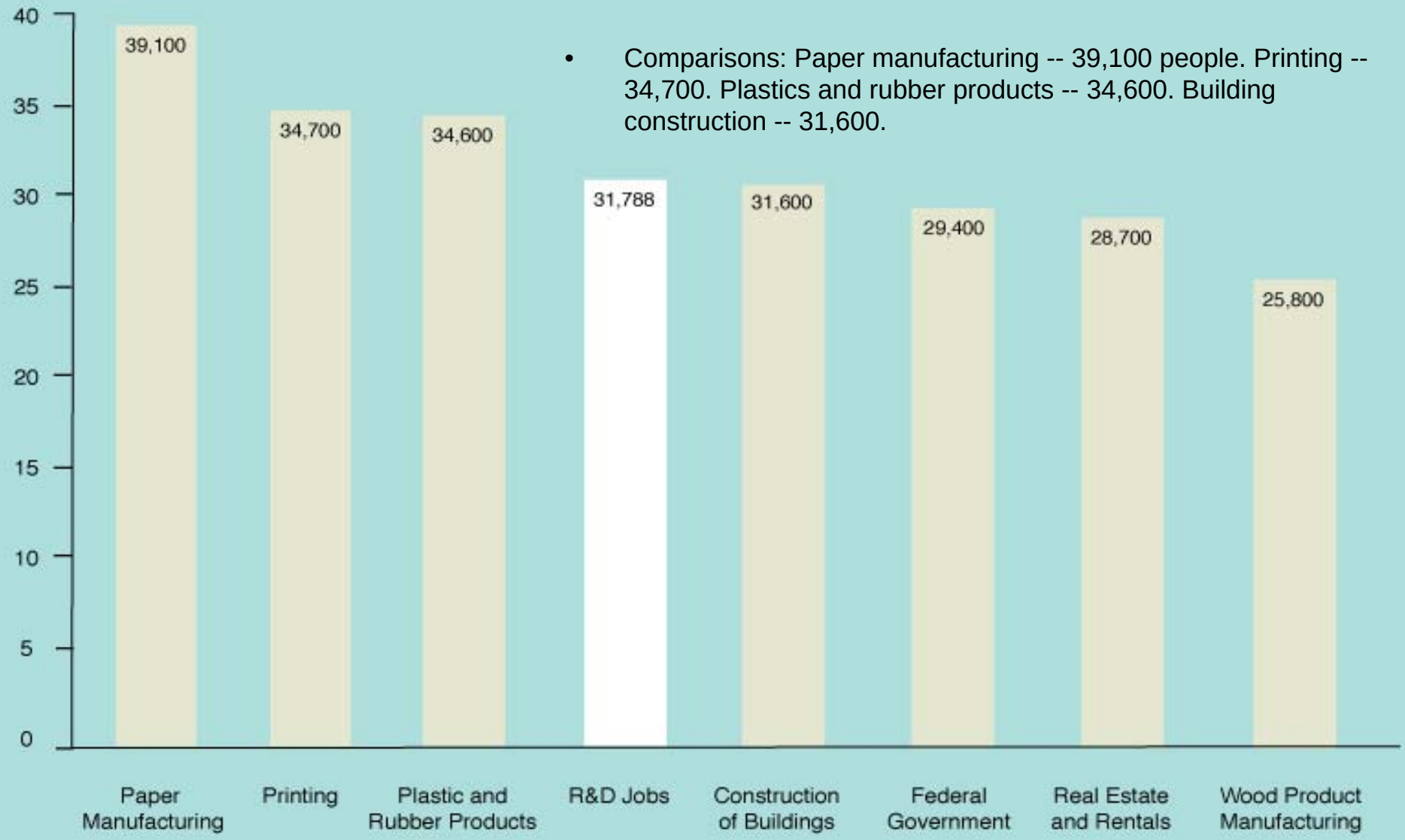
Total: $882.6 million. Note: Private colleges and institution estimates may be low due to efforts to eliminate double-counting

- Academic and other research institutions in Wisconsin spent about $883 million on direct research activities in the latest fiscal year. That spending translated to 31,788 jobs, using U.S. Department of Commerce multiplier of 36 jobs for every $1 million in R&D spending.
- Wisconsin ranks 15th among the 50 states with total academic R&D spending of $805.8 million from federal, state and private sources, according to SSTI.
- Those figures include $696.1 million in R&D spending by all UW System campuses in the 2002 fiscal year. Most of the UW-related R&D spending ($662.1 million) took place on the UW-Madison campus.
- The $805.8 million total also includes $109 million in research spending by private institutions, such as the Medical College of Wisconsin, the Milwaukee School of Engineering and Marquette University.
- The SSTI figures *do not* include research spending by the private Marshfield Clinic Research Foundation (about $75 million) or the research budgets of the two Veterans Administration hospitals in Wisconsin ($2.5 million).

Academic R&D jobs compared to other employment sectors*

in 1000's of people

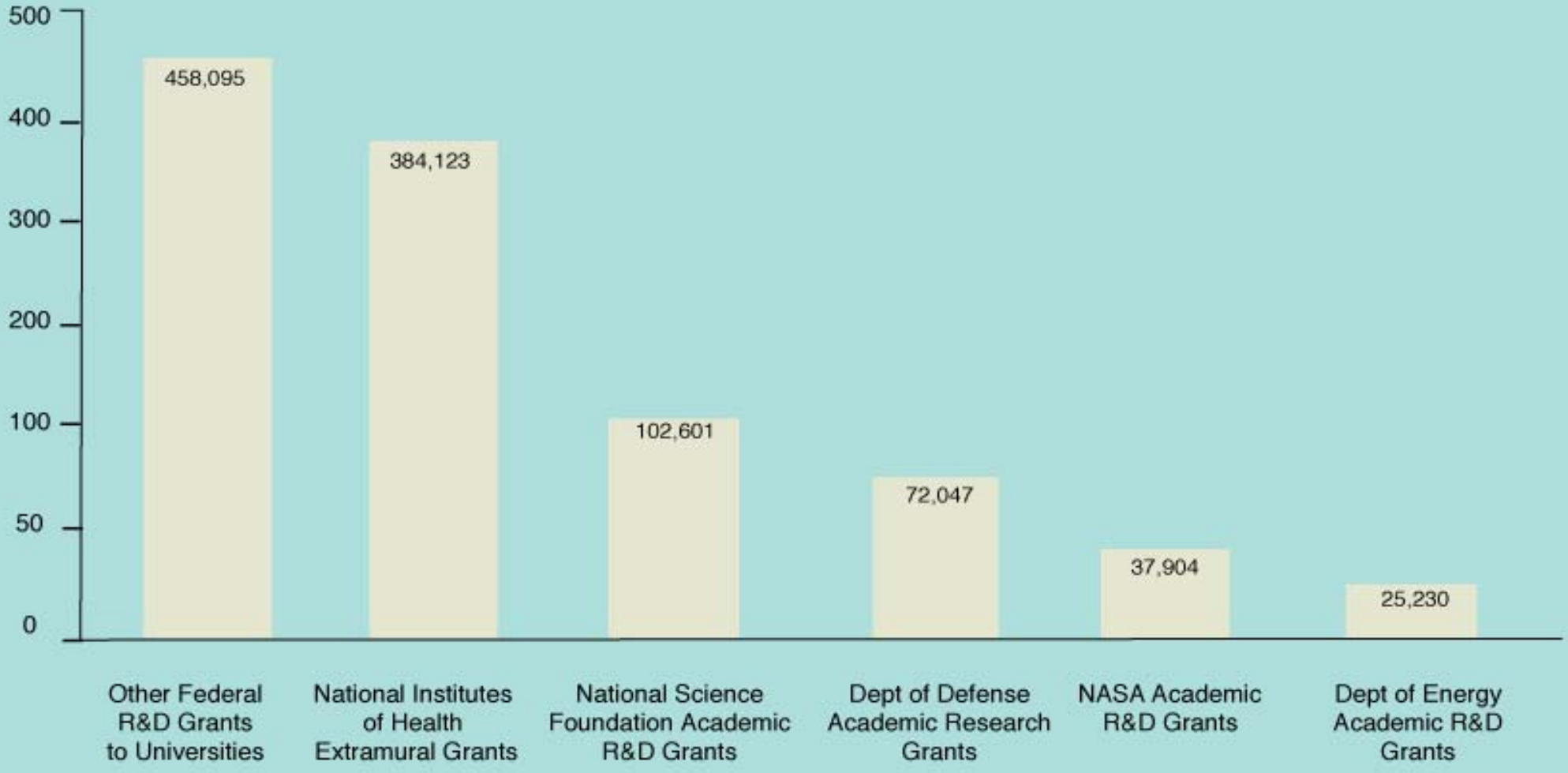
- If the jobs created by academic research spending in Wisconsin were reported as a separate category within the state labor market statistics, it would represent a significant sector in its own right.
- Comparisons: Paper manufacturing -- 39,100 people. Printing -- 34,700. Plastics and rubber products -- 34,600. Building construction -- 31,600.



*Estimates based on U.S. Commerce Department multiplier of 36 jobs created for every $1 million in academic R&D spending.

The American Association of Universities' estimate of 1.08 million jobs created nationally

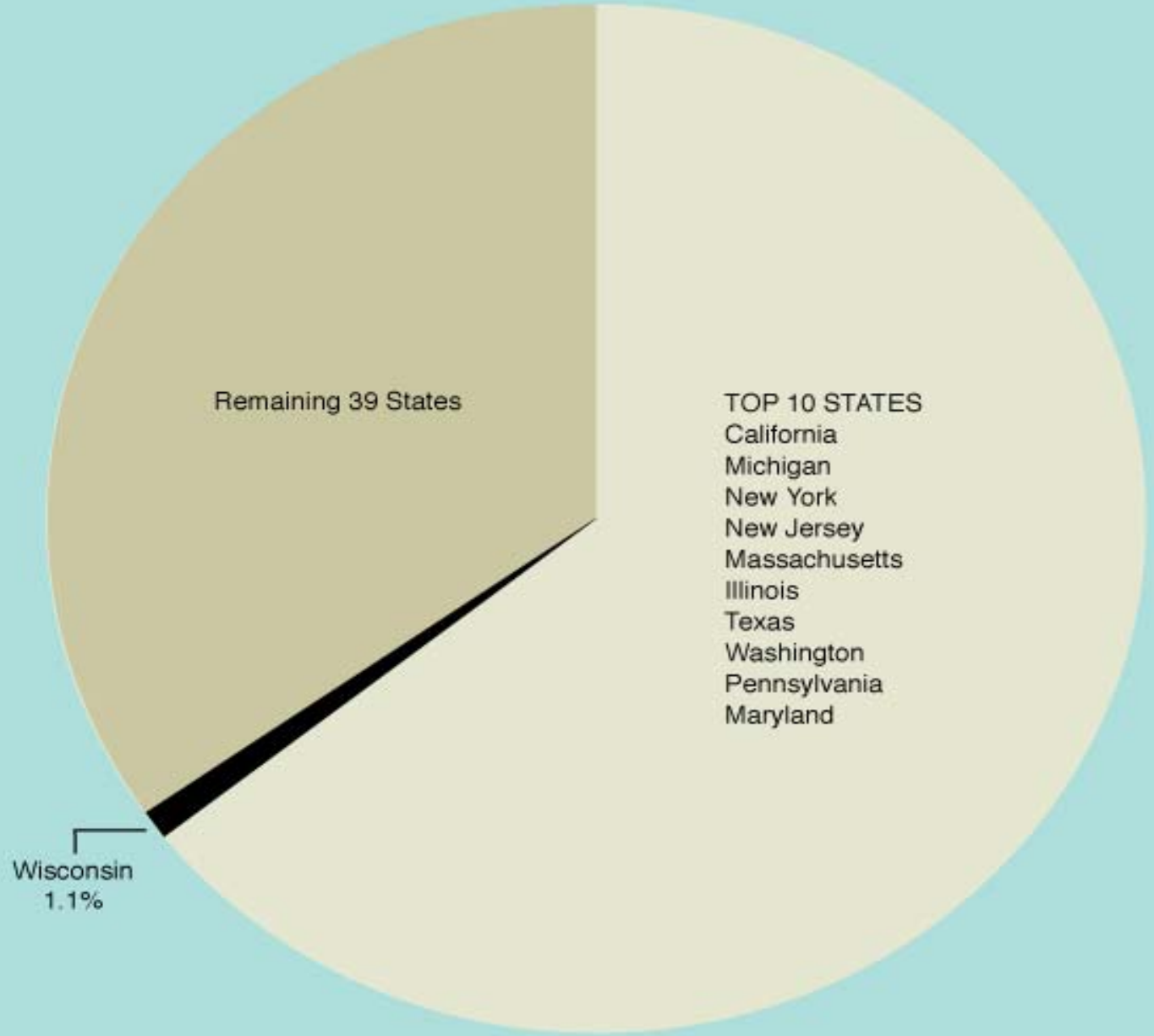
in 1000's of jobs

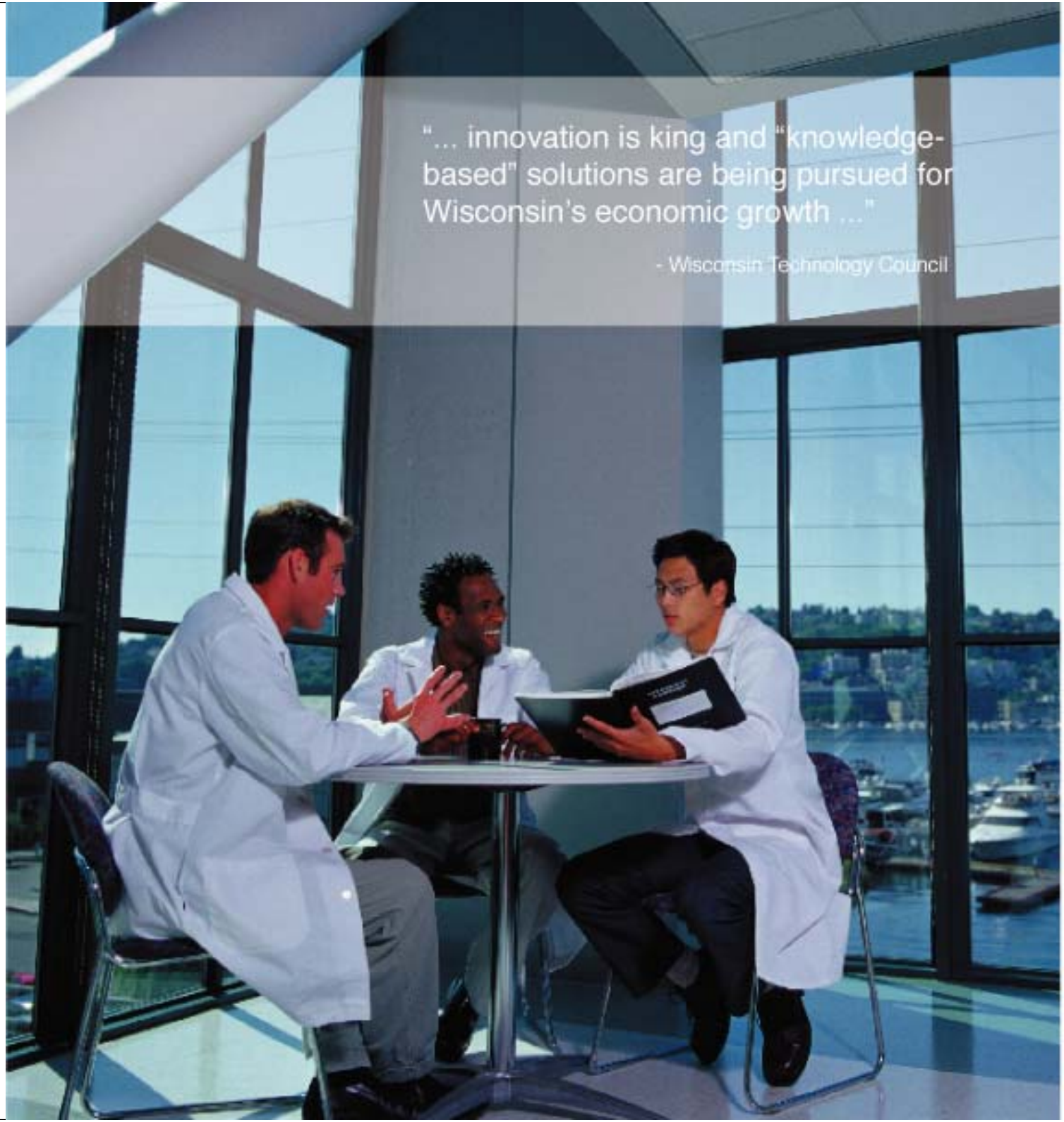


WISCONSIN'S ACADEMIC R&D PRODUCES JOBS

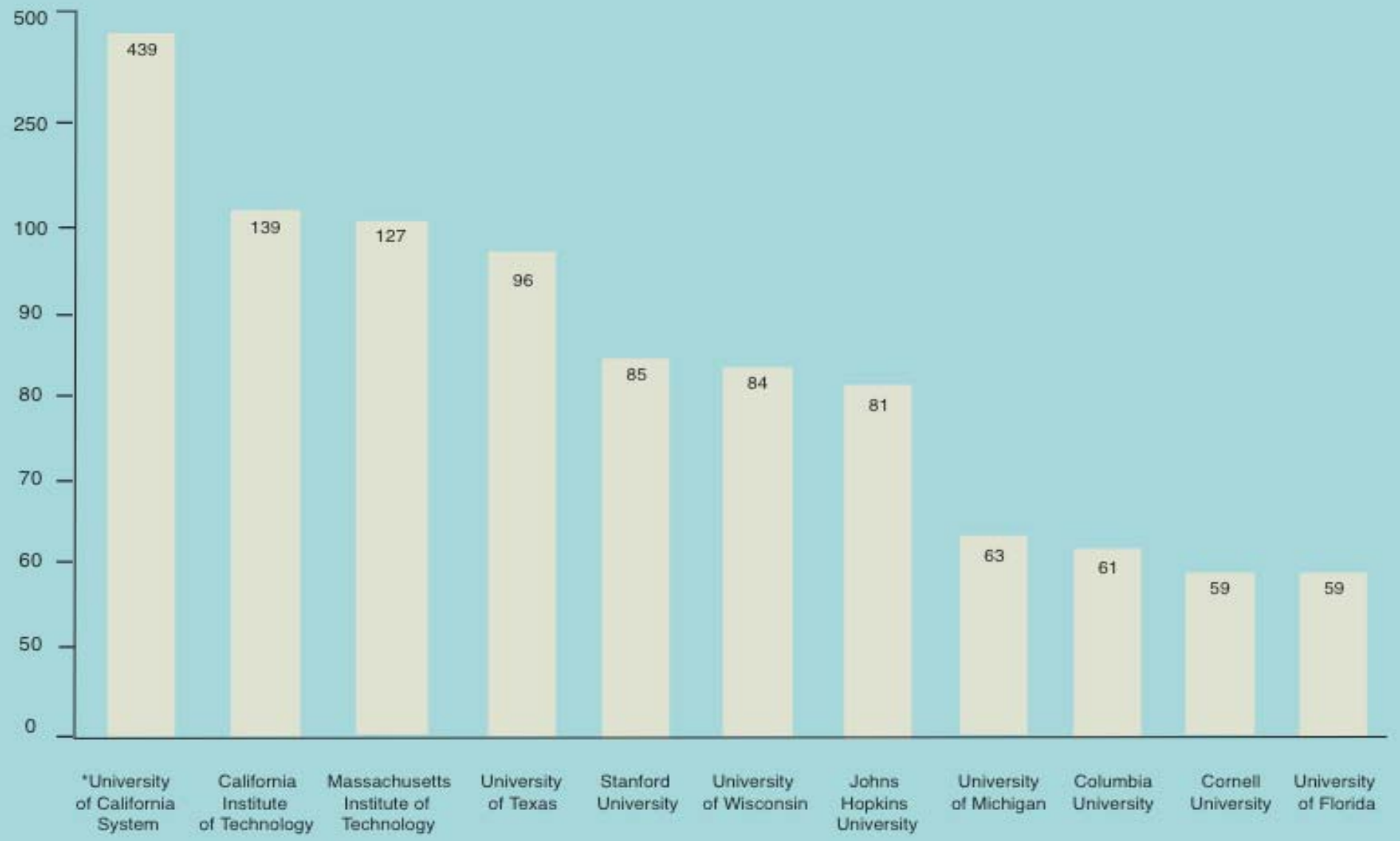
- The state's per capita spending on academic R&D was $148.14, or well above the U.S average of $126.17.
- Wisconsin fell just outside the top 20 states (22nd overall) with total R&D expenditures of $2.7 billion. This was primarily because Wisconsin lags the nation in state-based and industrial R&D (40th per capita).
- If not for Wisconsin's relatively high ranking in academic R&D, the state would slip out of the top half of all U.S. states in overall research and development spending.
- The nation's fastest-growing states also rank among the highest in overall R&D spending.

Ten states account for two-thirds of all R&D spending in the United States

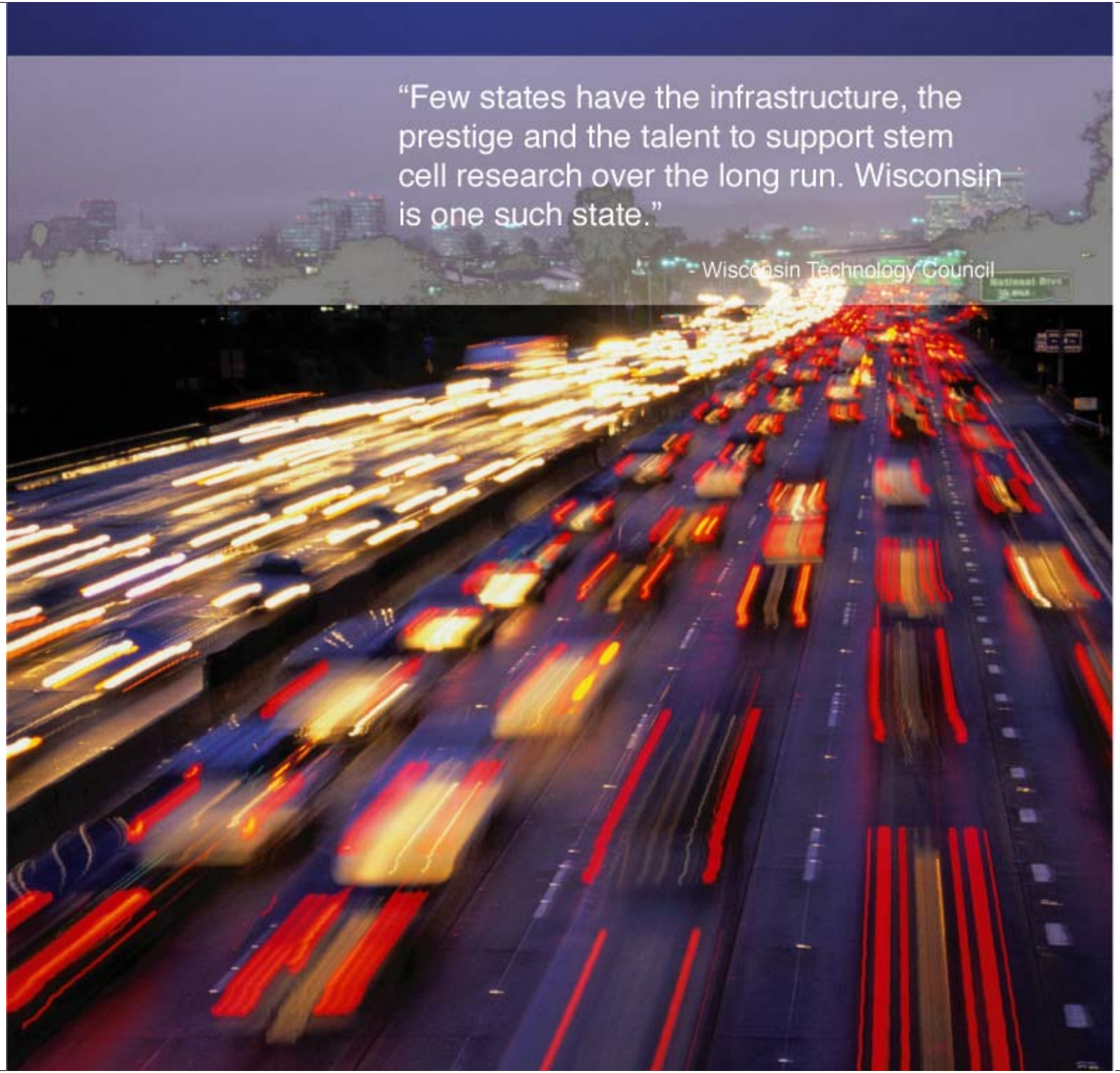


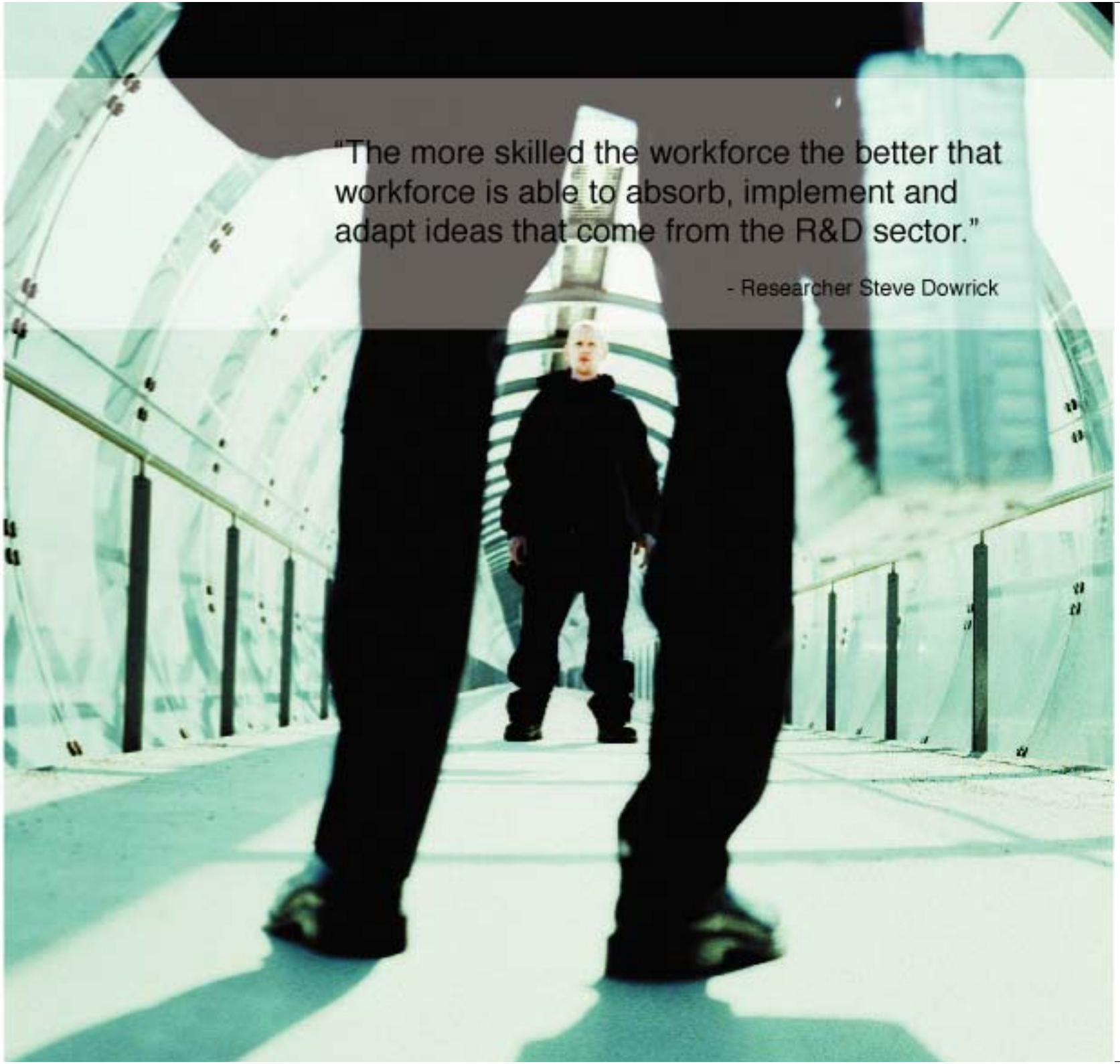

"... innovation is king and "knowledge-based" solutions are being pursued for Wisconsin's economic growth ..."
- Wisconsin Technology Council

Top Ten U.S. Universities Receiving Patents (2003)



*Note: The University of California System numbers reflect patents received by nine different campuses


"Few states have the infrastructure, the prestige and the talent to support stem cell research over the long run. Wisconsin is one such state."
- Wisconsin Technology Council


"The more skilled the workforce the better that workforce is able to absorb, implement and adapt ideas that come from the R&D sector."
- Researcher Steve Dowrick


"The driving force of economic growth is investment in human capital – skills and ideas – rather than investment in machines and buildings."
- Researcher Steve Dorwick

STATE BY STATE

- **Illinois**
  Academic research per capita ranking (fiscal 2001): 27 out of 51
  State spending on higher education per $1,000 of personal income (2004): 33rd of 50

- **Iowa**
  Academic research per capita ranking (fiscal 2001): 7 out of 51
  State spending on higher education per $1,000 of personal income (2004): 15 of 50

- **Michigan**
  Academic research per capita ranking (fiscal 2001): 25 out of 51
  State spending on higher education per $1,000 of personal income (2004): 26th of 50

- **Missouri**
  Academic research per capita ranking (fiscal 2001): 23 out of 51
  State spending on higher education per $1,000 of personal income (2004): 43rd of 50

- **North Dakota**
  Academic research per capita ranking (fiscal 2001): 6 out of 51
  State spending on higher education per $1,000 of personal income (2004): 4th of 50

STATE BY STATE

- **Pennsylvania**
  Academic research per capita ranking (fiscal 2001): 10 out of 51
  State spending on higher education per $ income (2004): 1,000 of personal 46th of 50

- **Texas**
  Academic research per capita ranking (fiscal 2001): 26 out of 51
  State spending on higher education per $1,000 of personal income (2004): 19th of 50

- **Indiana**
  Academic research per capita ranking (fiscal 2001): 33 out of 51
  State spending on higher education per $1,000 of personal income (2004): 20th of 50

- **Kentucky**
  Academic research per capita ranking (fiscal 2001): 42 out of 51
  State spending on higher education per $1,000 of personal income (2004): 8th of 50

- **Minnesota**
  Academic research per capita ranking (fiscal 2001): 34 out of 51
  State spending on higher education per $1,000 of personal income (2004): 21st of 50

STATE BY STATE

- **New York**
  Academic research per capita ranking (fiscal 2001): 17 out of 51

  State spending on higher education per $1,000 of personal income (2004): 41st of 50

- **Ohio**
  Academic research per capita ranking (fiscal 2001): 36 out of 51

  State spending on higher education per $1,000 of personal income (2004): 35th of 50

- **South Dakota**
  Academic research per capita ranking (fiscal 2001): 51 out of 51

  State spending on higher education per $1,000 of personal income (2004): 22nd of 50

- **Washington**
  Academic research per capita ranking (fiscal 2001): 24 out of 51

  State spending on higher education per $1,000 of personal income (2004): 29th of 50

WISCONSIN'S DECLINING HIGHER EDUCATION EFFORT

- 25-year trend toward weaker public support for higher education in Wisconsin. The state's higher education "effort," as measured by per capita public spending, has declined faster than the U.S. average and more sharply than all but one of the eight Big Ten Conference states.

- Wisconsin has reduced its higher education spending effort by 47.6 percent since 1978. That is 40th among the 50 states (with 50th representing the weakest effort by Colorado) and seventh lowest of the eight Big Ten Conference states. Those states are Iowa, Illinois, Indiana, Ohio, Michigan, Minnesota, Pennsylvania and Wisconsin.

- Wisconsin is 27th nationally in appropriations of state tax funds for operating expenses of higher education per $1,000 of personal income, or fifth lowest among the eight Big Ten states.

WISCONSIN'S DECLINING HIGHER EDUCATION EFFORT

- Wisconsin is 36th nationally in the change in state tax fund appropriations per $1,000 of state personal income between fiscal 2001 and fiscal 2004, and sixth among the eight Big Ten states.
- Based on the current trends, Wisconsin would stop spending state dollars on higher education in the year 2040, which is the 16th fastest rate among the 50 states.
- In 1995, according to the Midwestern Higher Education Compact, Wisconsin ranked 3rd highest among 12 Midwestern states in total funding for higher education. By 2002, it had fallen to sixth.
- Between 1994 and 2004, Wisconsin ranked 46th out of 50 states in the percentage change in state tax-funded spending on higher education. That was the lowest ranking among the eight Big Ten states.

2003-2004 STATE BUDGET CUTS WERE FELT BY UW-MADISON IN FALL OF 2004

- Faculty funded from GPR/fees declined from 1,368 FTE in 2002-03 to 1,342 FTE in 2003-04. Down 1.9 percent.
- Non tenure-track academic staff funded from GPR/fees instructional declined from 892 FTE in fall 2002 to 843 FTE in fall 2003. Down 5.4 percent.
- Course sections taught declined from 12,102 in fall 2002 to 11,922 in fall 2003. Down 1.5 percent.
- Group instruction sections (lecture, laboratory, discussion and field) declined from 7,831 in fall 2002 to 7,683 in fall 2003. Down 1.9 percent.
- Lecture sections taught in undergraduate courses declined from 2,525 in fall 2002 to 2,448 in fall 2003. Down 3.1 percent.
- Laboratory sections taught in undergraduate courses declined from 1,389 in fall 2002 to 1,319 in fall 2003. This was a decline of 5.0 percent.

This decline took place at a time when the number of full-time equivalent students at the UW-Madison increased by one-half of 1 percent.


"If the slide in higher education funding effort continues, the academic R&D infrastructure in Wisconsin could deteriorate."
- Wisconsin Technology Council

RECOMMENDATIONS

- Continue to invest in capital improvement programs such as BioStar and HealthStar, which leverage the assets of the UW-Madison and create spinout companies and jobs.
- Reverse the long slide in public support for the UW System, beginning in the 2005-2007 state budget bill.
- Encourage more interdisciplinary research cooperation between the UW-Madison, the Medical College of Wisconsin and the Marshfield Clinic. Similar to Minnesota approach.
- Establish a commission, such as the Michigan Commission on Higher Education and Economic Growth, to explore other options and to more deliberately track “best practices” in other states.
- Create a Wisconsin Innovation and Research Fund to help secure federal and corporate grants by providing small matching grants to faculty who collaborate with business on R&D.

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