

EMERGING RESEARCH INSTITUTIONS: The Path Forward

September 15, 2011

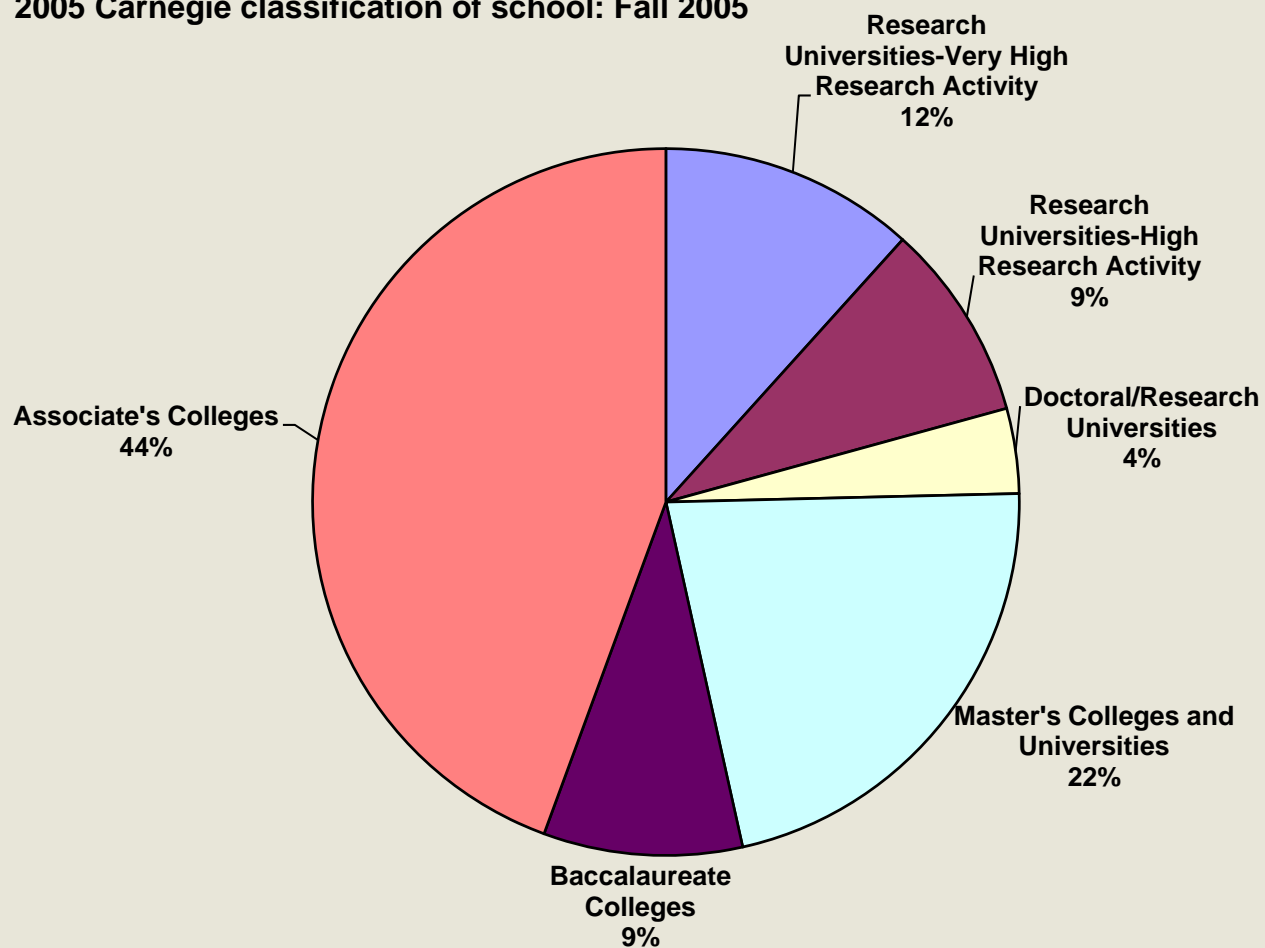
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IMPORTANCE OF EMERGING RESEARCH INSTITUTIONS

- ERIs enroll 79% of undergraduate and 55% of graduate students in all fields
- ERIs enroll the majority of underrepresented minority students in all ethnic/racial groups
- Research directly impacts academic quality
- ERIs are an untapped national resource for scientific innovation
- Strengthening research capacity at ERIs strengthens the U.S. research enterprise as a whole

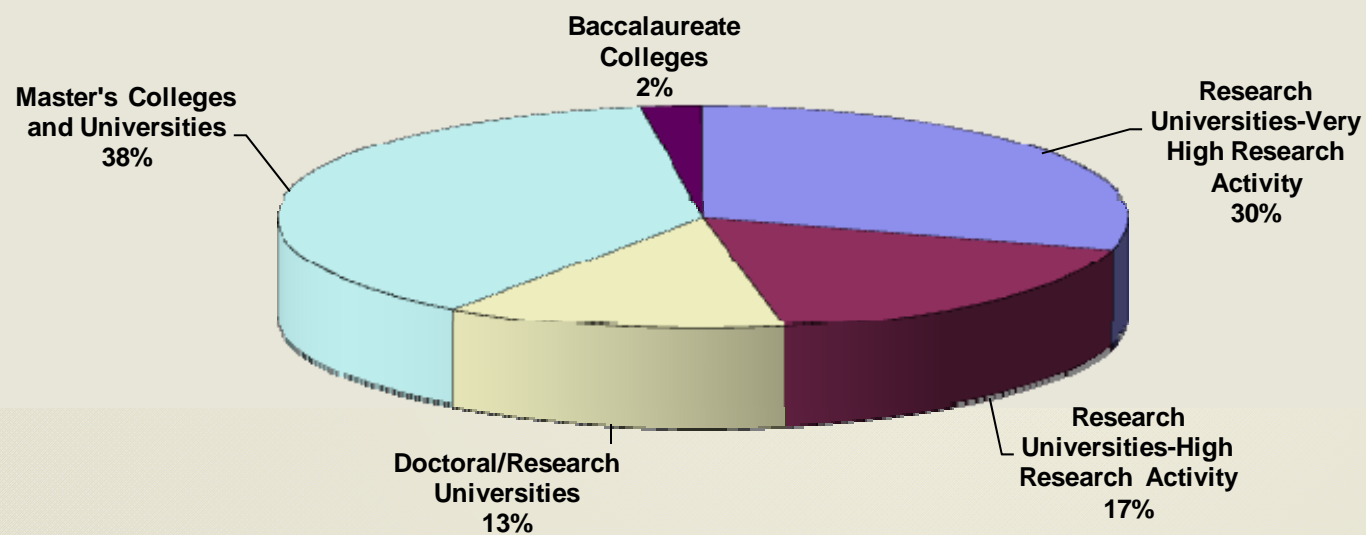
SOURCE: Partnerships for Emerging Research Institutions (2009), National Research Council

**Undergraduate enrollment in all fields and by
2005 Carnegie classification of school: Fall 2005**



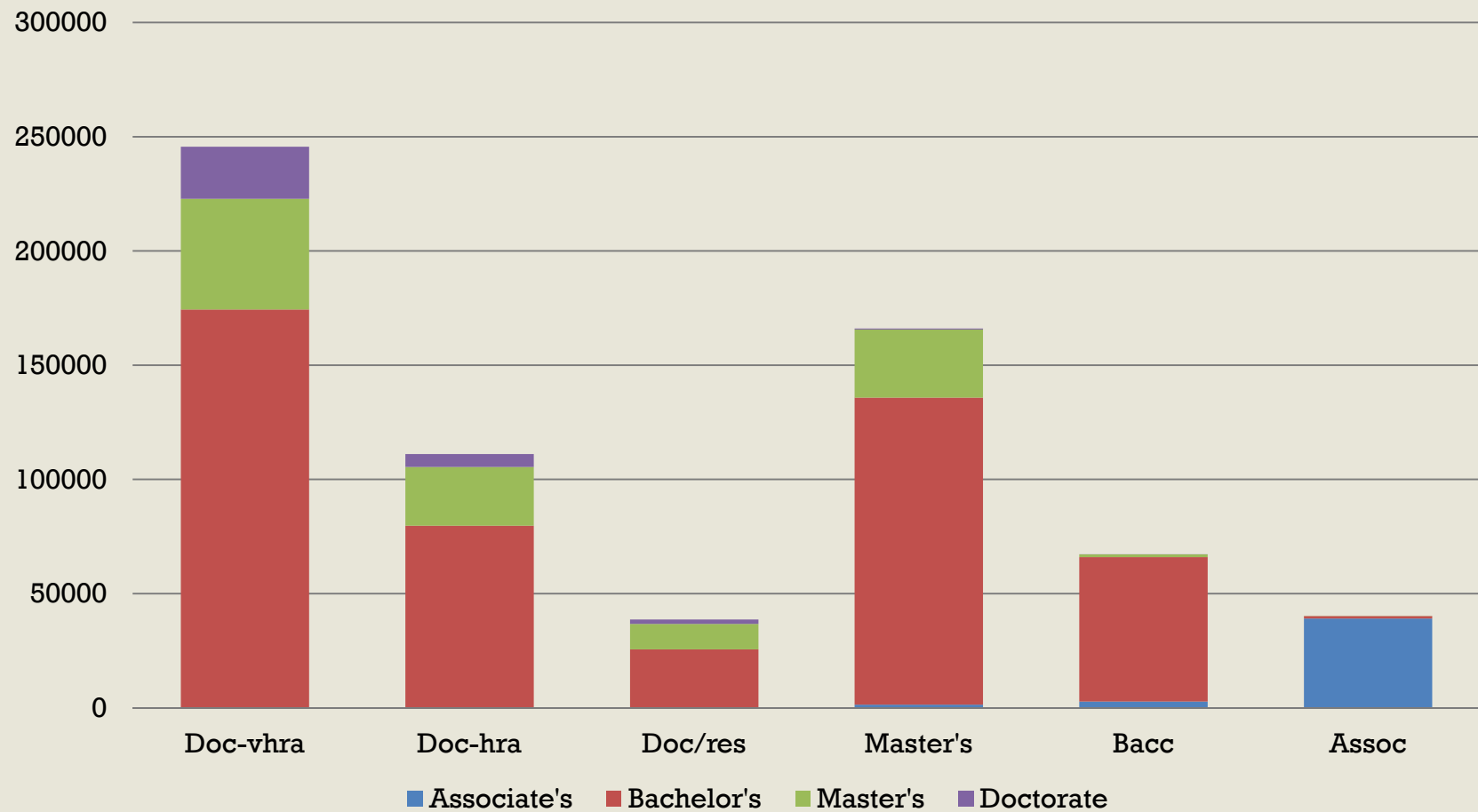
SOURCE: National Science Foundation, Division of Science Resources Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment

**Graduate enrollment in all fields and by
2005 Carnegie classification of school: Fall 2005**



SOURCE: National Science Foundation, Division of Science Resources Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey, 2005

S&E degrees awarded, by degree level and Carnegie institution type: 2007



SOURCE: National Science Board, Science and Engineering Indicators 2010, appendix Table 2-1

MAJOR CHALLENGES FOR ERIs

- Branding and class schema
- Lack of faculty research time
 - Excessive teaching and advising loads
 - Inflexible teaching schedule
 - Extra administrative duties
- Lack of institutional resources
 - Office of sponsored research
 - Office of technology transfer
 - Business services
 - Centrally-supported information resources
- Inadequate reward system

POTENTIAL SOLUTIONS

- Faculty research time
 - Consolidate many small classes into fewer large ones
 - Make research an undergraduate class
 - Consolidate teaching schedules
 - Provide “reassigned time” (new faculty)
 - Implement faculty sabbaticals at doctorate-granting institutions (GA faculty development program)
 - Increase efficiency through faculty development programs (proposal development groups, peer mentoring, learning communities)

POTENTIAL SOLUTIONS continued

- Institutional resources
 - Office of sponsored research (partnerships, FDP)
 - Office of technology transfer (partnerships, grants, outsourcing)
 - Business services (GrantsPlus program)
 - Centrally-supported information resources (GALILEO project)

POTENTIAL SOLUTIONS continued

- **Reward system**
 - **Tenure and post-tenure review policy**
 - Greater emphasis on research in faculty evaluations
 - Reward for faculty-directed and undergraduate research
 - **Faculty start-up funds**
 - Strategic investment
 - **Returned overhead as research incentive**

POTENTIAL SOLUTIONS continued

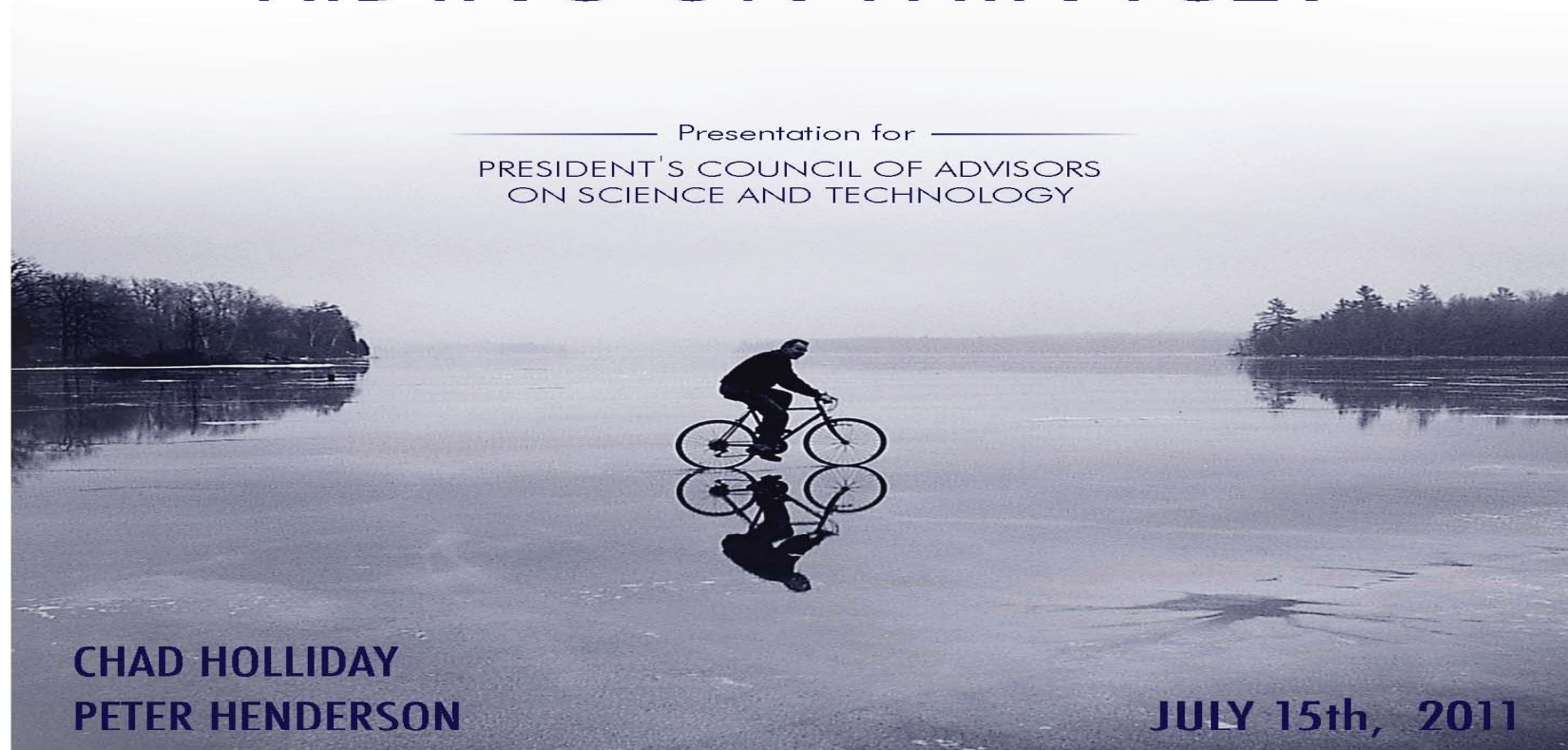
- Model Federal programs
 - National Science Foundation
 - STARS Alliance program
 - EPSCoR
 - National Institutes of Health
 - Extramural Associates Research and Development Award
 - MORE programs
 - Department of Defense
 - U.S. Army Mentor-Protégé program

SUMMARY

- ERIs can develop a “research” culture and embrace the “teacher-scholar” model
- Administrative leadership is pivotal in developing a research climate
- Administrators must be better informed about the value and cost of doing research
- ERIs should provide seed capital for emerging and potentially productive research areas (strategic investments)
- ERIs should appeal for funding to propel them into more competitive enterprises

ARE AMERICAN RESEARCH UNIVERSITIES RIDING ON THIN ICE?

— Presentation for —
PRESIDENT'S COUNCIL OF ADVISORS
ON SCIENCE AND TECHNOLOGY



CHAD HOLLIDAY
PETER HENDERSON

JULY 15th, 2011

STUDY ON RESEARCH UNIVERSITIES

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

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STUDY FOCUS

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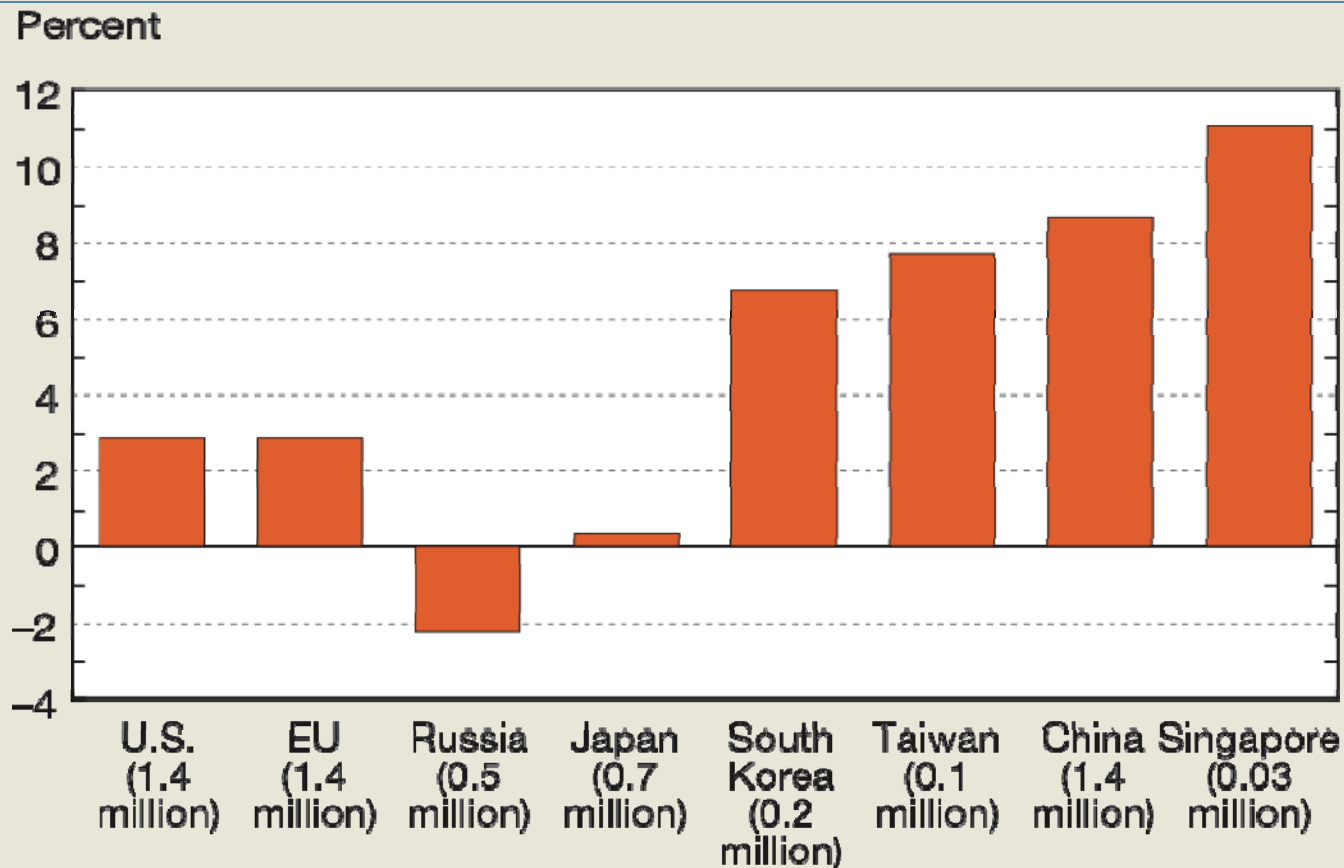
The study committee will, in carrying out its work, focus on:

- Research and doctoral programs carried out by research universities and associated medical centers
- Basic and applied research in research universities, along with collaborative research programs with other components of the research enterprise (e.g., national and federal laboratories, federally-funded research and development centers, and corporate research laboratories)
- Doctoral education and, to the extent necessary, the pathways to graduate education and research careers

In carrying out this charge, the study committee will, in addition to other tasks it identifies:

- describe and assess the historical development, current status, trends, and societal impact of research universities and the “ecosystem” of this set of institutions in the United States, placing these institutions in the context of the nation's research, innovation, and industrial enterprises and the nation's system of higher education
- assess the organizational, financial, and intellectual capacity of public and private research universities in the United States, including reference to research universities internationally to the extent possible with existing data
- envision the mission and organization of these diverse institutions 10-20 years into the future and the steps needed to get there

Average annual growth in number of researchers in selected regions/countries/economies: 1995–2007

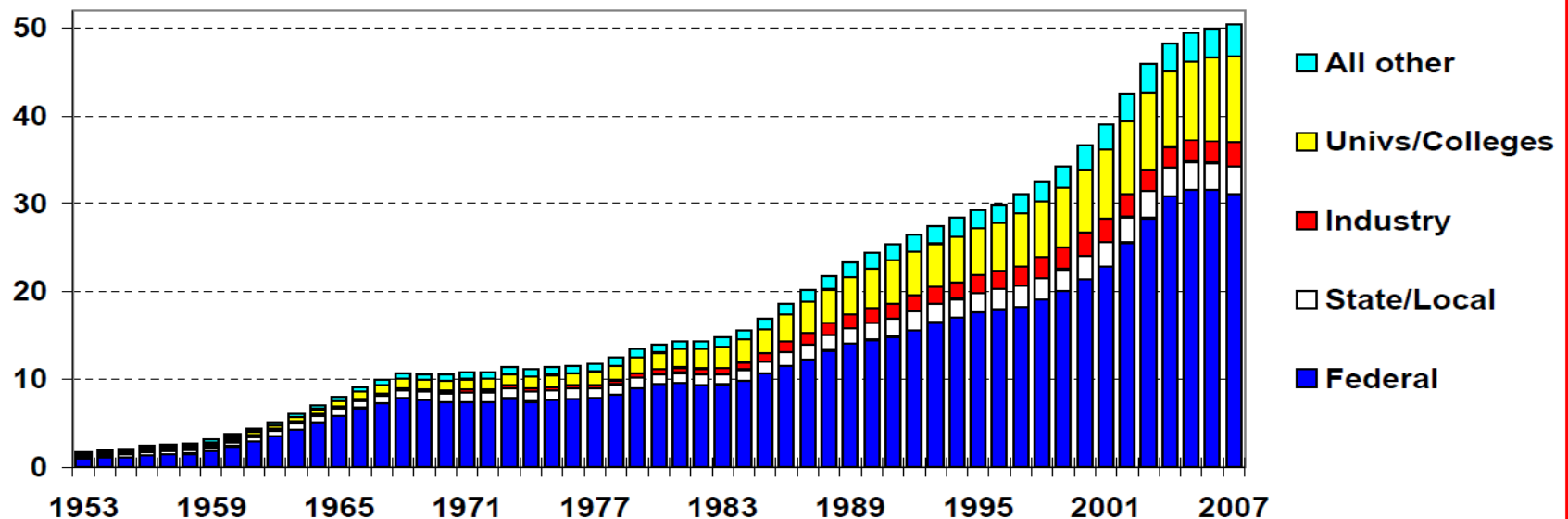


SOURCE: National Science Board, Science and Engineering Indicators 2010

The Funding Burden on Universities

R&D at Colleges and Universities by Source of Funds

in billions of constant FY 2008 dollars, FY 1953-2007



What's Driving the Increase?

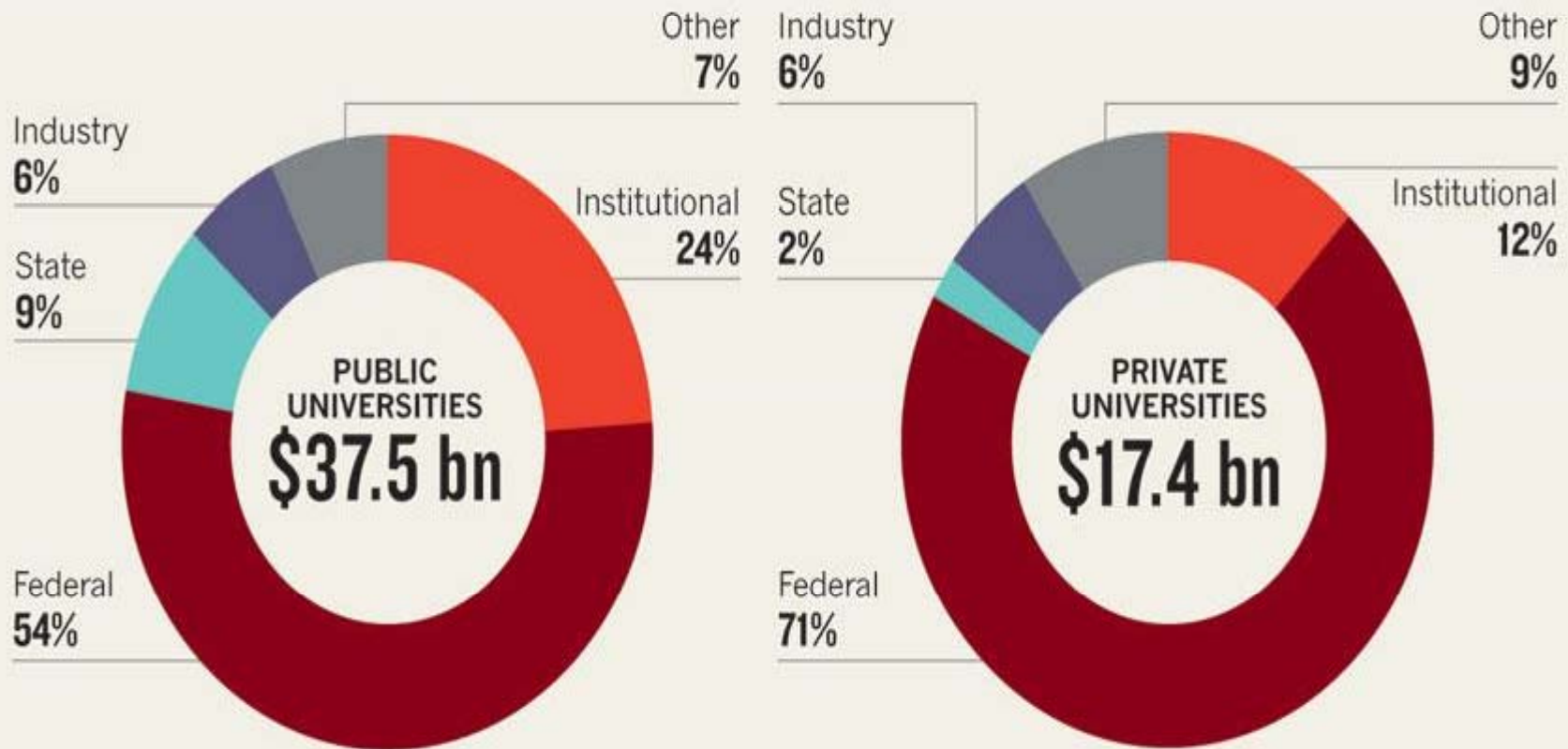
Continual Increase in Number of Unfunded Compliance Mandates

Arbitrary Agency Limitations on Indirect Cost Recovery

Grant Cost Sharing (even if IDC is reduced or not paid at all)

FOOTING THE US RESEARCH BILL

With state support falling below 10% of total research funding, public universities are increasingly relying on institutional funds, and student tuition fees in particular. The effect is less pronounced at private universities, which rely more on federal research dollars and can have large endowments.



Research and development funding source as a percentage of total (2009)

Road To America's Future— A New Age of Partnerships.



STUDY ON RESEARCH UNIVERSITIES

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IMPLICATIONS

- Opportunity for follow-on demonstration projects by FDP (case studies?) to implement recommendations of NRC report
 - Federal compliance regulations
 - Full indirect cost recovery
- ERI partnerships to bridge basic and applied research schism – holistic perspective
- Need for position paper focused on ERIs and national competitiveness
 - Contributions to technological innovations
 - Undergraduate research and workforce development