

Pathways, Potholes and Partnerships: Rethinking the Future of Graduate Education

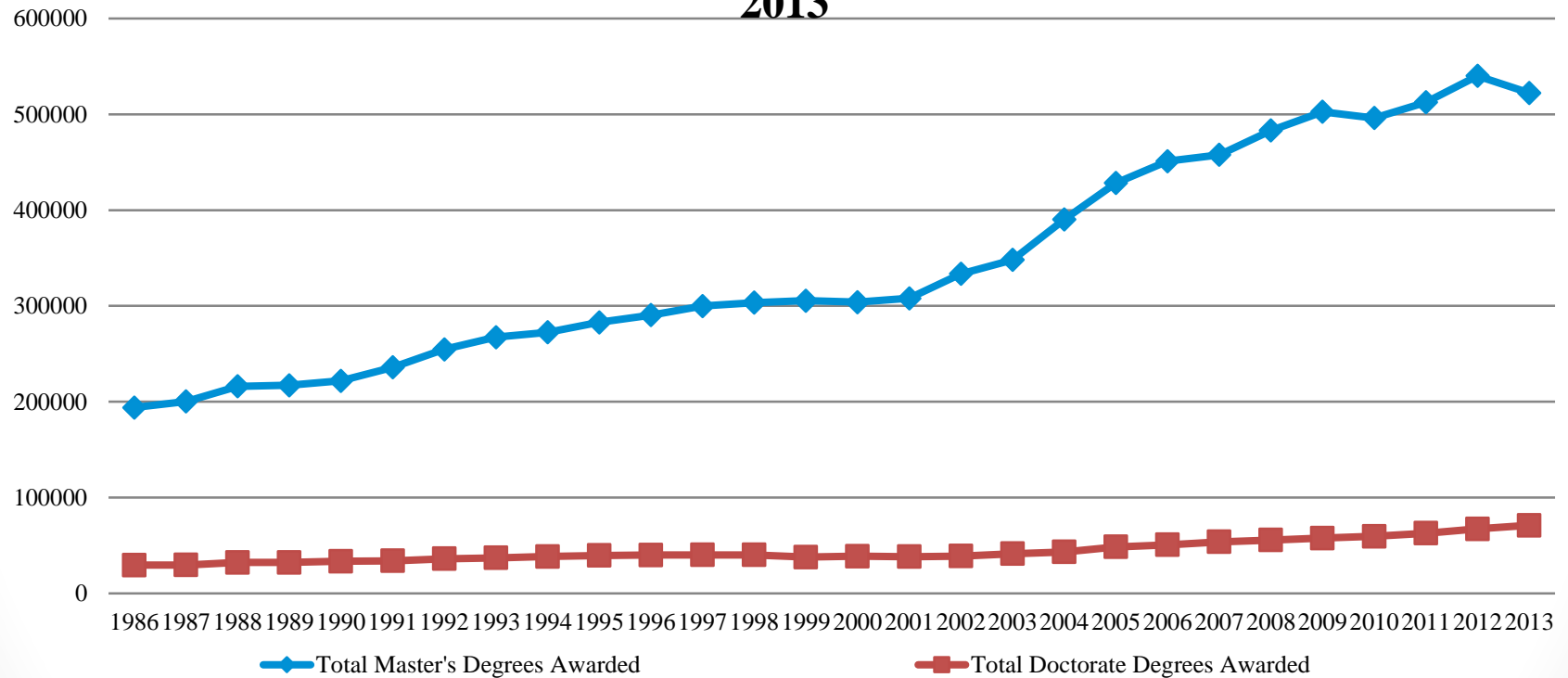
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Why does Graduate School pathway matter?

- The knowledge based economy of the 21st century increasingly requires the advanced knowledge and skills acquired in graduate school
- Graduate education trains creative thinkers able to produce cutting-edge, interdisciplinary research
- Number of jobs requiring advanced degree at entry-level to grow by 1.1 million between 2012 and 2022: master's +18.4% and doctoral/professional +16.0%.
- Problem is that technology is growing faster than our ability to educate – resulting in more domestic inequality – and more outsourcing (Tyler Cowen, 2007)

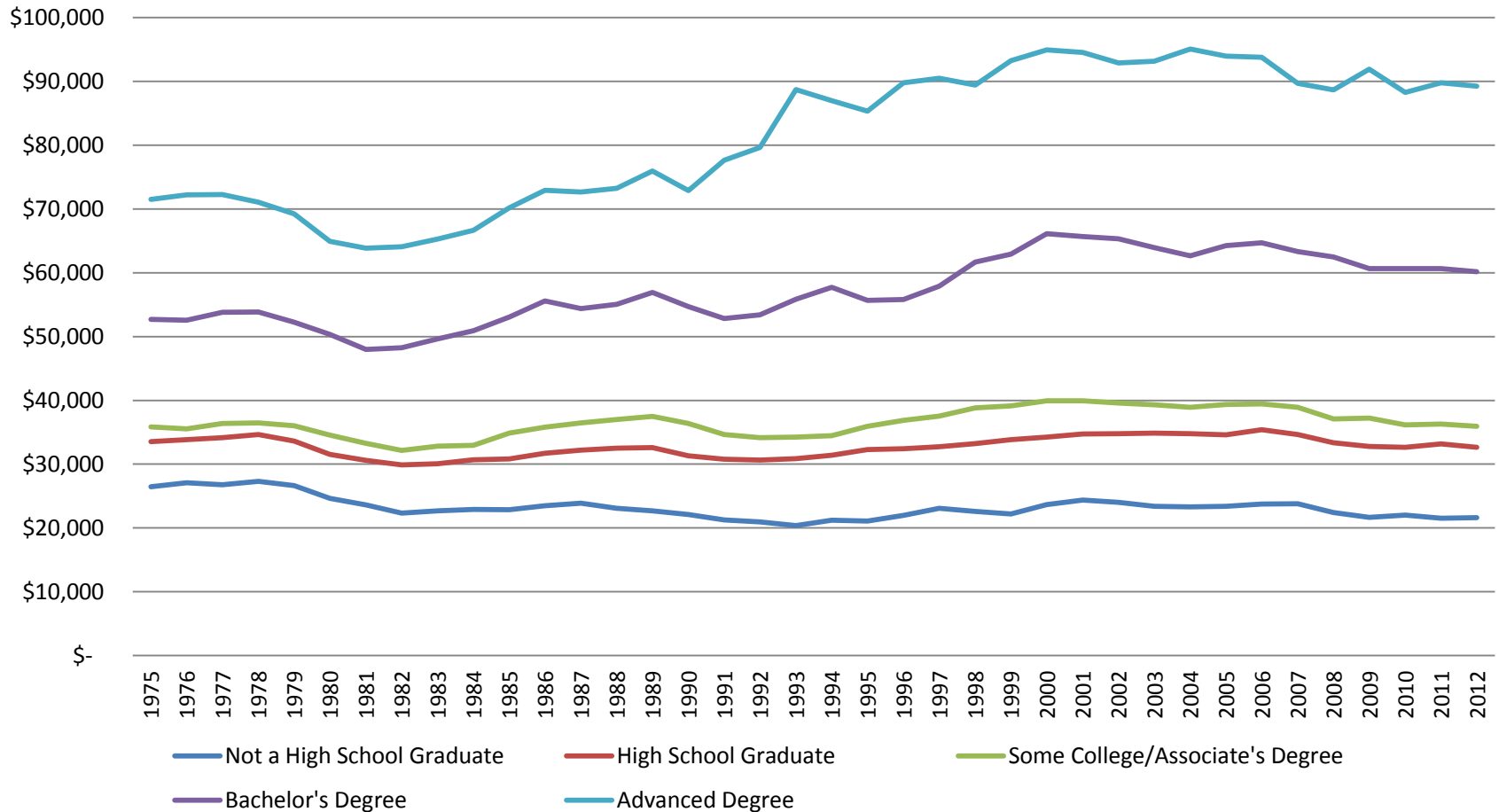
Growth of Master's Degree

Total Number of Master's and Doctorate Degrees Awarded, 1986-2013



Data Source: CGS/GRE Graduate Enrollment and Degree Surveys

Mean Earnings of Workers 18 Years and Over by Educational Attainment, 1975-2012 (In 2012US\$)

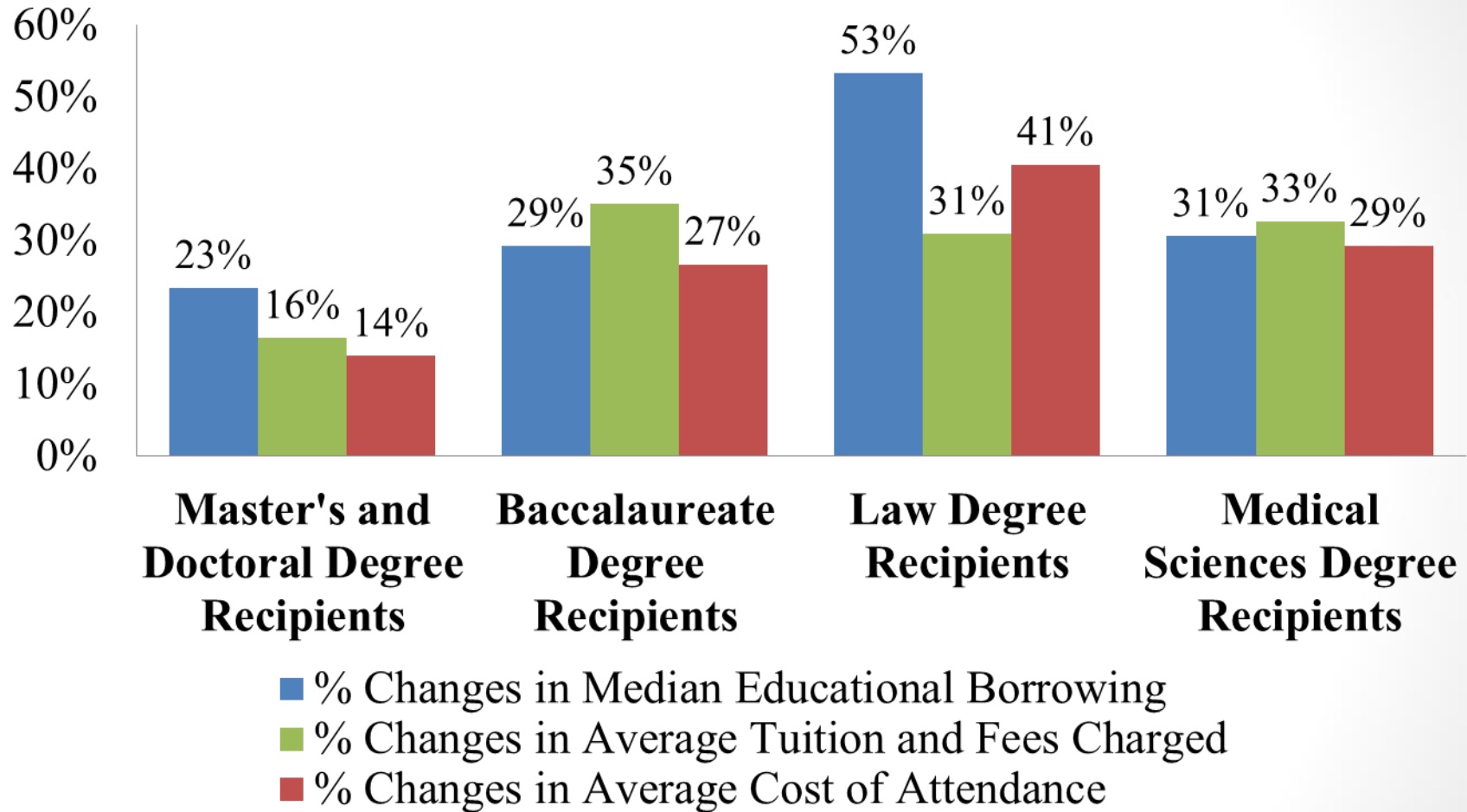


Data Source: US Census Bureau (2013). *Table A-3. Mean Earnings of Workers 18 Years and Over, by Educational Attainment, Race, Hispanic Origin, and Sex: 1975 to 2012* [Data file]. Retrieved from <http://www.census.gov/hhes/socdemo/education/data/cps/historical/index.html>.

International Trends

- **Other countries** recognize graduate education and human capital development as engine of economic competitiveness
- **International students** have increasing options
 - China and India are investing substantially in graduate programs
 - Canada, Australia, and others are more welcoming to internationals
 - For international students educated in the US increasingly find viable career options in their home countries
- Europe and China now produce **more doctorates** in the sciences and engineering than the U.S.

Median Cumulative Borrowing for Graduate Education by Graduate Degree Recipients, by Degree Types, 2011-12

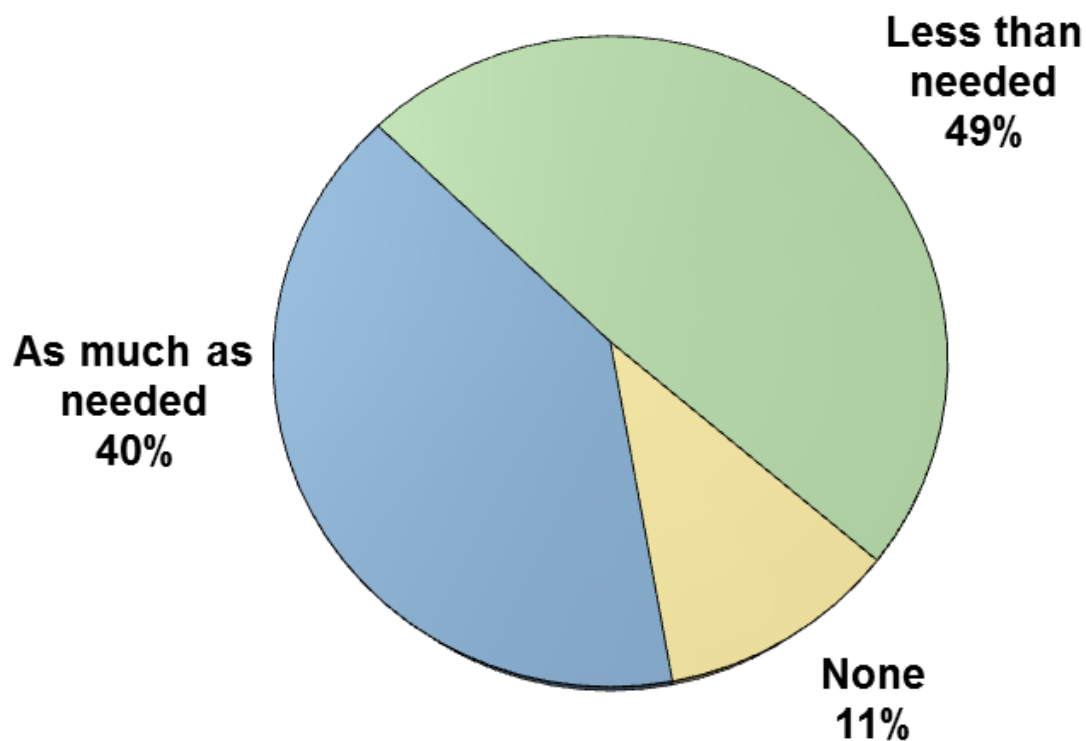


Data Source: U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study, 2011-12 Computation via: NCES PowerStats Ver. 1.0

Students Don't Feel Informed About the Jobs They Might Get

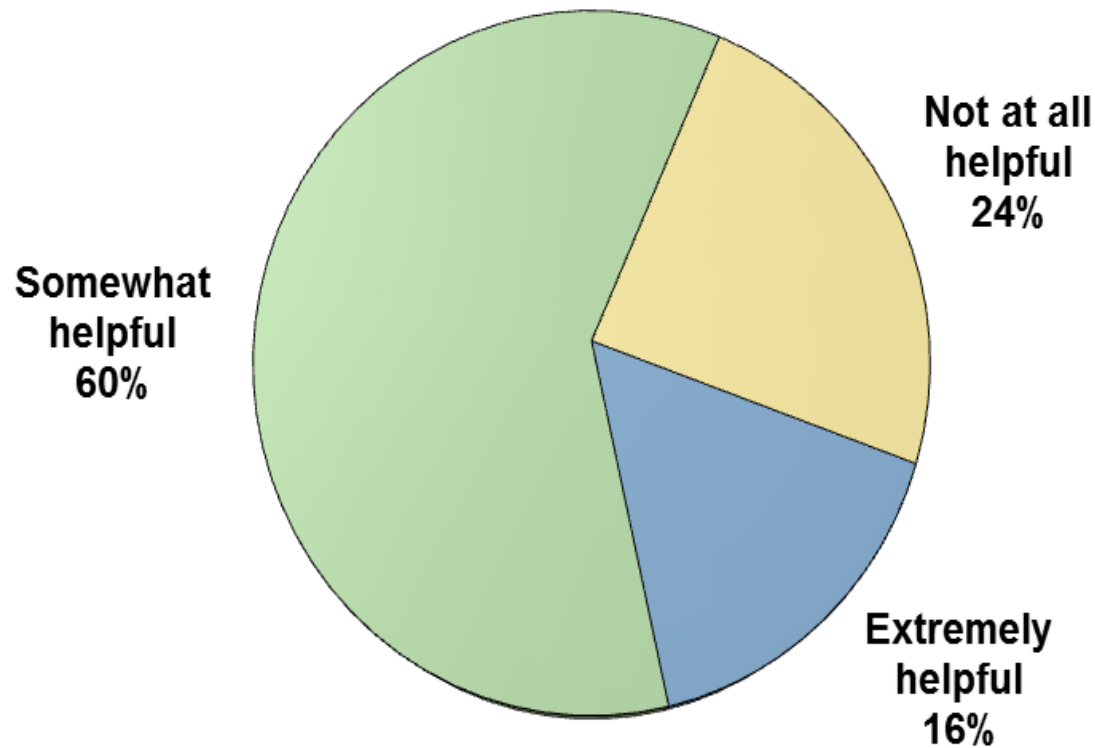


When you were considering graduate school, how much information did you receive about potential careers?



Source: ETS-CGS Pathways Project Student Survey, 2012

When you were considering graduate school, how helpful was the information you received about potential careers?

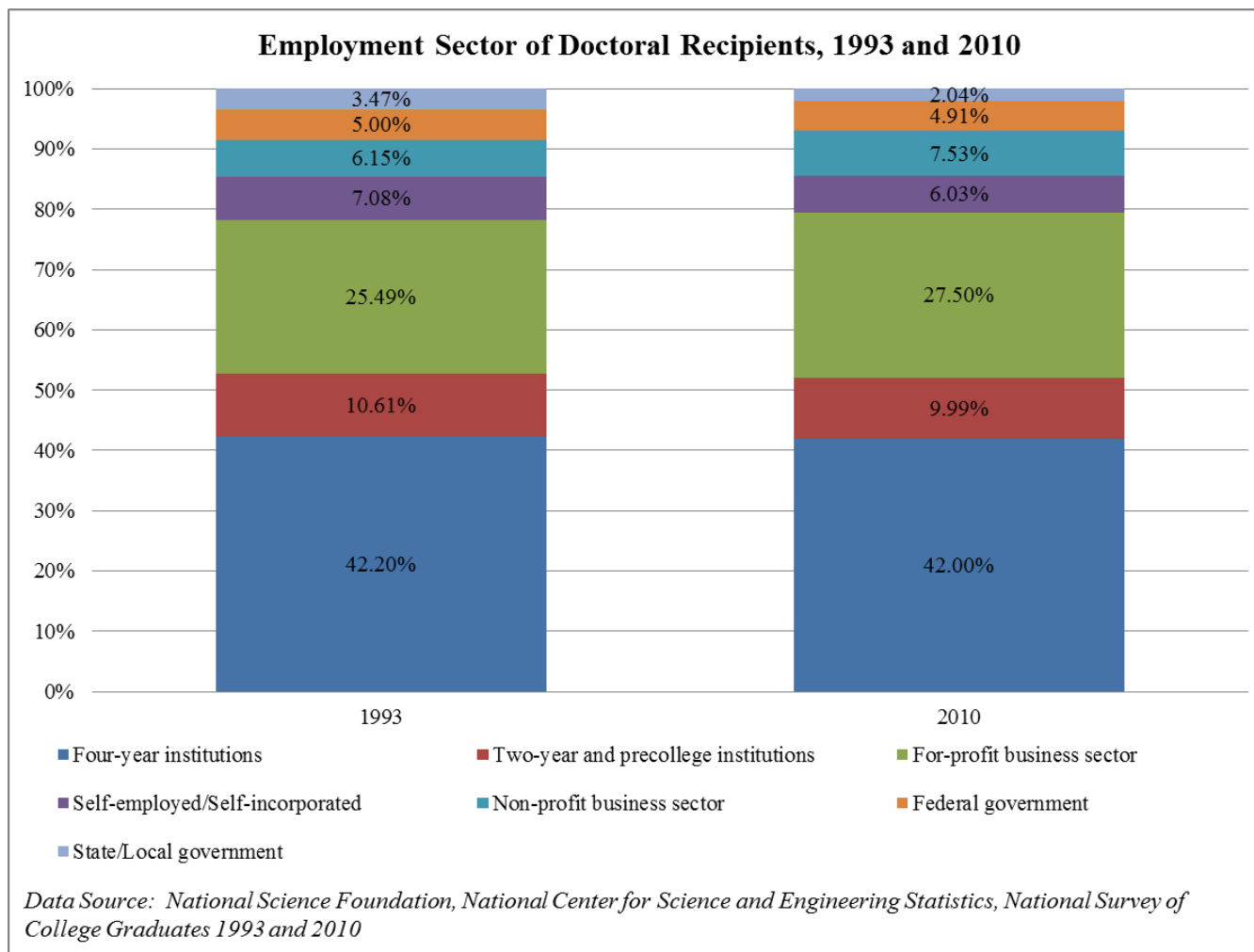


Source: ETS-CGS Pathways Project Student Survey, 2012

Graduate Deans Confirm Student Voice

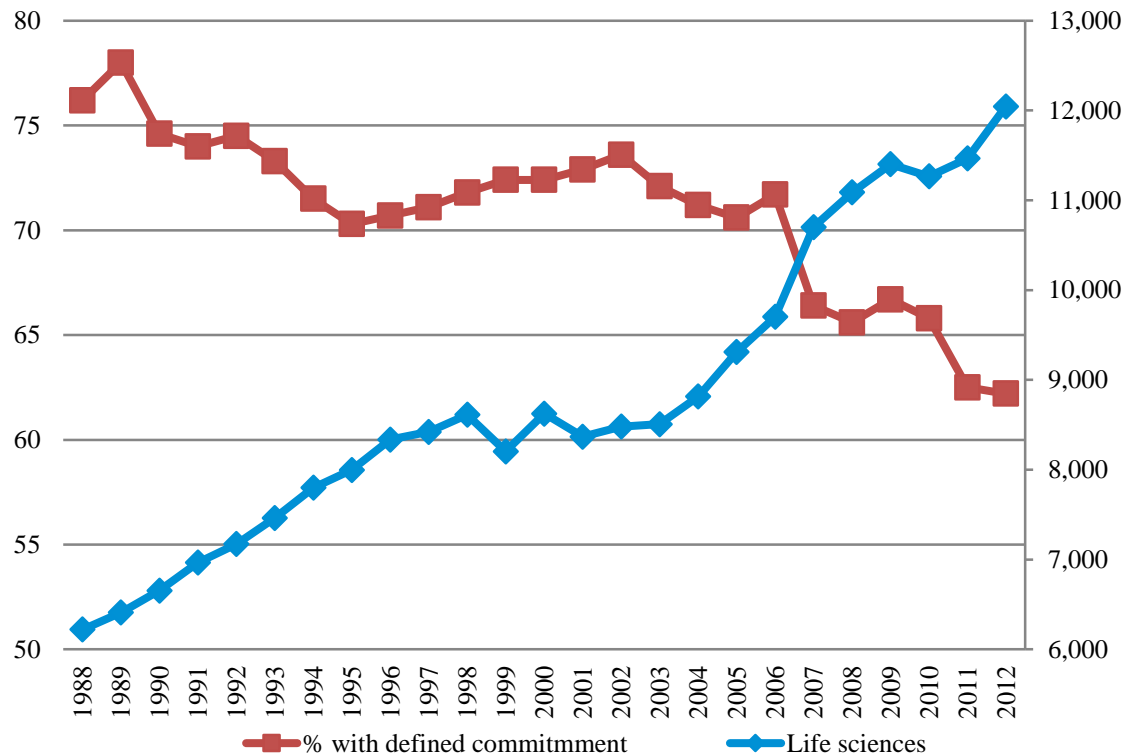
- Students enter graduate school without good understanding of career options
- Many leave graduate school still lacking good knowledge of career options
- Graduate deans recognize importance of illuminating career pathways
- Graduate deans are dissatisfied with ability to track career outcomes

Pattern of PhD Placement



Obscure Career Pathways

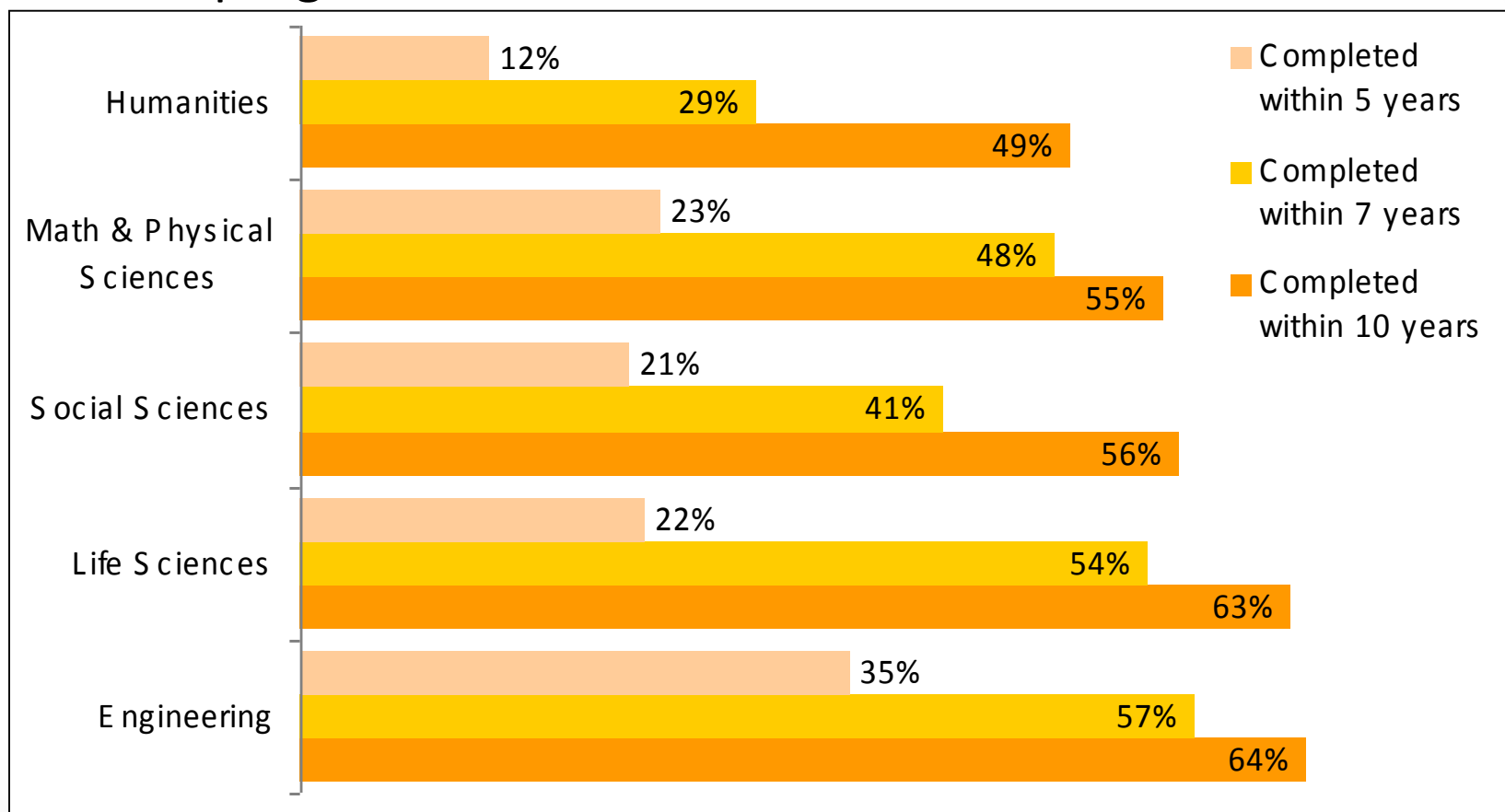
Percentage of Life Sciences Doctorate Recipients with Defined Commitment for Employment or Postdoctoral Study and Number of Doctorate Recipients, 1988-2012



Data Source: National Science Foundation, Survey of Earned Doctorates

Low Completion Rates

The current state of attrition and completion in US doctoral programs wastes human and financial resources



Source: CGS. (2008) *PhD Completion and Attrition: Analysis of Baseline Program Data from the PhD Completion Project*.

What skills do employers think students need?

Leadership

NETWORKING

Entrepreneurship

Conflict Resolution

Team Building

Negotiation

Complex Problem Solving

Evaluation Skills

Advanced Systems Analysis

Inter-Cultural Cooperation

Communication Skills

Project Management

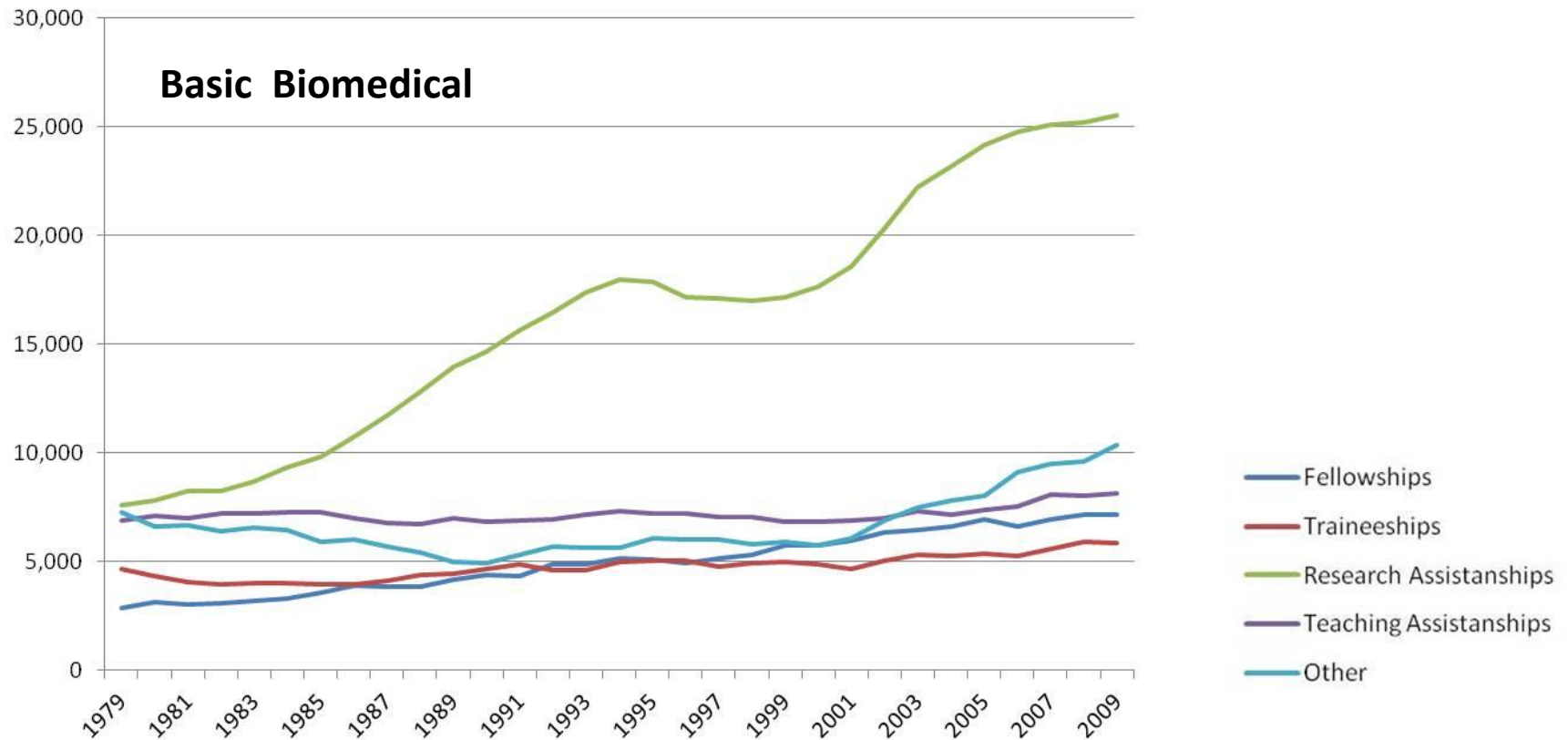
Career Building

Are We Aligning Education with Skills Sets Required?

Students Perceived Importance and Level of Preparedness Across Skills

Skill	Very important	Very prepared
Creativity	55%	39%
Oral communication	83%	54%
Teamwork	72%	47%
Resilience	67%	47%
Planning and organization	78%	52%
Ethics and integrity	75%	54%
Technological comfort and savvy	50%	39%
Publications	20%	30%
Research skills	38%	56%
Writing skills	70%	66%
Analysis/synthesis of data	65%	62%
Teaching and training	45%	38%

Doctorate Students by Type of Support



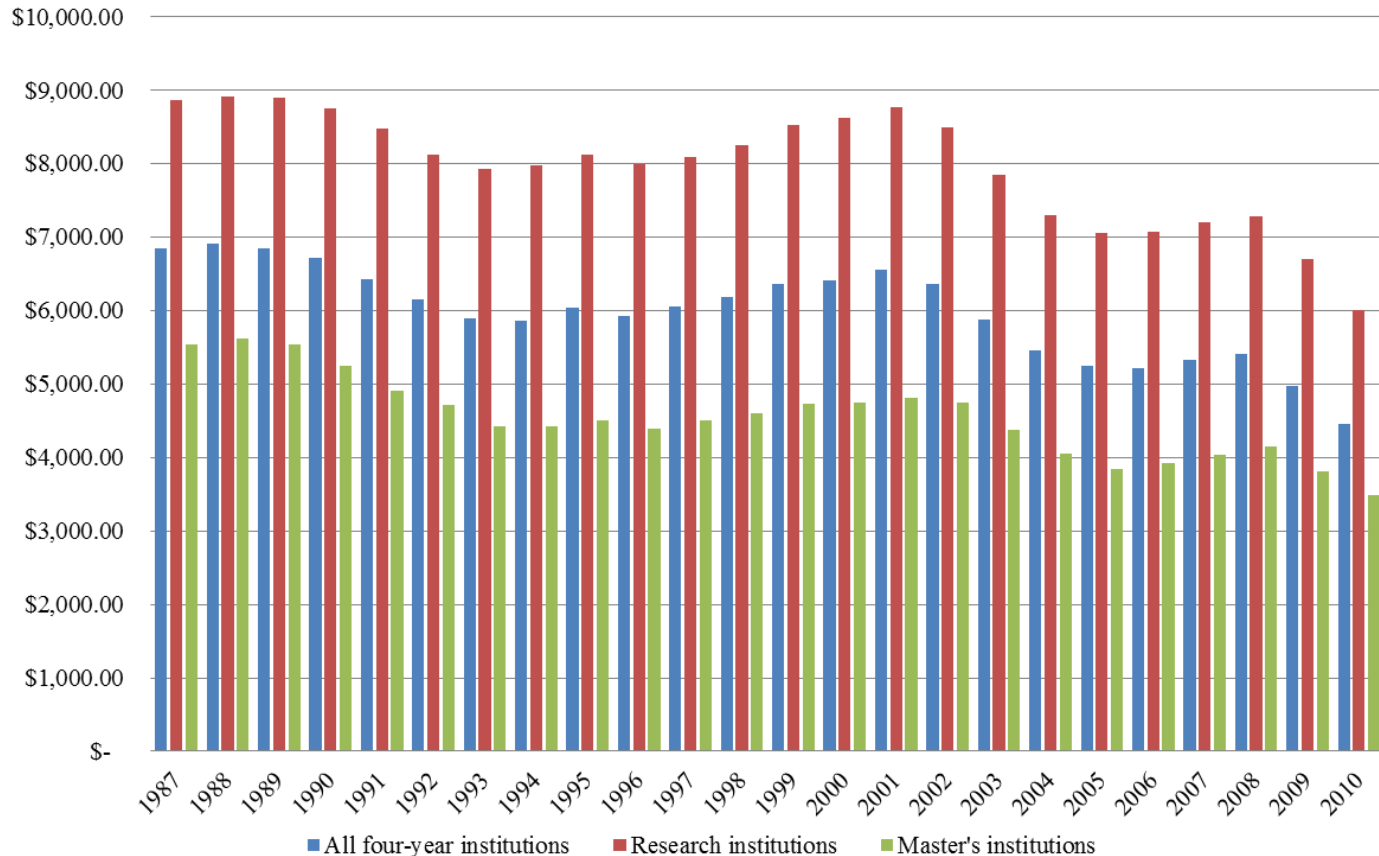
National Institutes of Health. *Biomedical research workforce working group draft report: A working group of the Advisory Committee to the Director*. (2012) Washington, DC: National Institutes of Health, p. 18.

Environmental Influences

- Decreased public funding
- High accountability
- Pressure to increase enrollment
- Global competition for students
- Digital technology

State Budget Declines

State Appropriations to Four-year Institutions per Full-time Equivalent Students in 2010US\$, 1987-2010



Data Source: U.S. Department of Education, National Center for Education Statistics, IPEDS Analytics: Delta Cost Project Database 1987-2010.

Accountability



First time U.S. enrollment declining

% Change in First-time Graduate Enrollment of U.S. Citizens and Permanent Residents, 2002-2013



**Average annual %
change, 2002 to 2012**

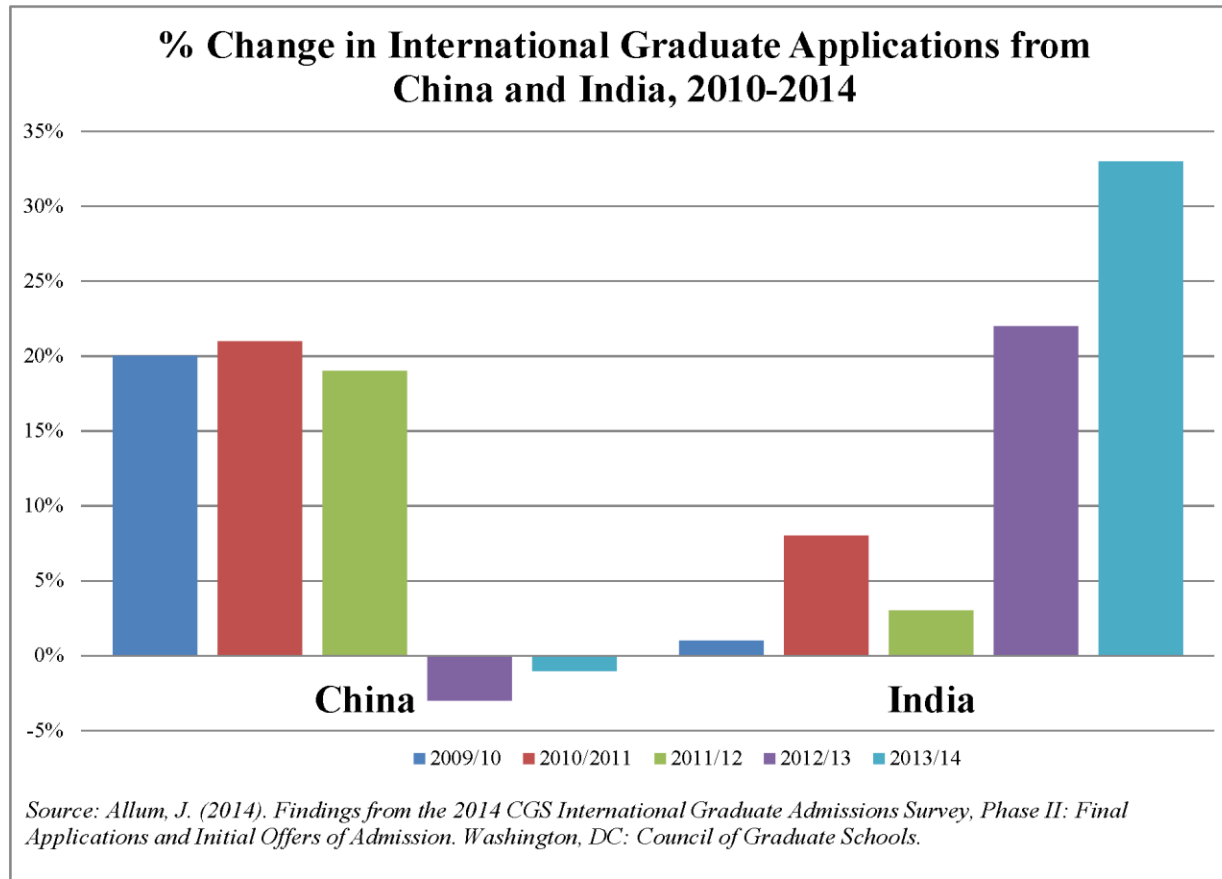
**Average annual %
change, 2007 to 2012**

% change 2011 to 2012

% change 2012 to 2013

■ **% change in first-time graduate enrollment of U.S. citizens and permanent residents**

International Graduate Applications Uneven



Digital technology could undermine financial support for graduate education



A friendship founded on business
is a good deal better than a
business founded on friendship.

-John Rockefeller

Call to Action for all Deans

- Promoting financial education
- Tracking career outcomes
- Increasing faculty awareness about student outcomes
- Increasing completion rates
- Supporting professional development for graduate students
- Taking “Political Action” for graduate support

Daily Life of a Dean

