"Federal funding sources: where the money really is…"

Jeffrey Brown, New Mexico State University

Julia Hayes, University of Massachusetts Amherst

Simon Rhodes, IUPUI

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Abstract. *Many federal agencies support the arts, humanities, and sciences, but many faculty are only aware of the grant programs offered by a subset of the total. Further, some of the agencies commonly targeted by faculty for funding do not have the largest budgets for research grants. This session will describe the full array of federal funding agencies, their interests and goals, what funds they have to disperse for research, and their review methodologies and applicant success rates.*
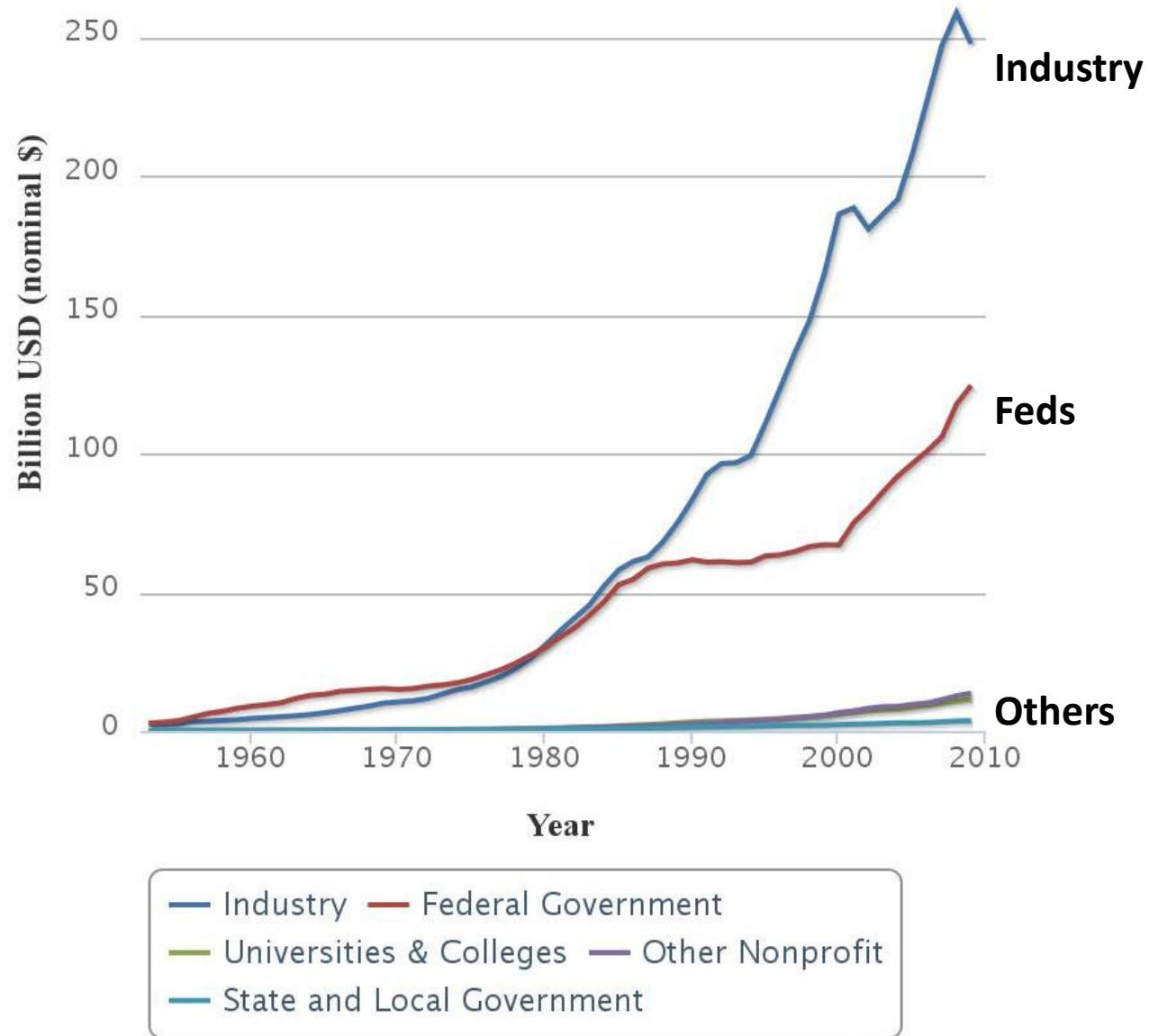
Science (and Engineering)
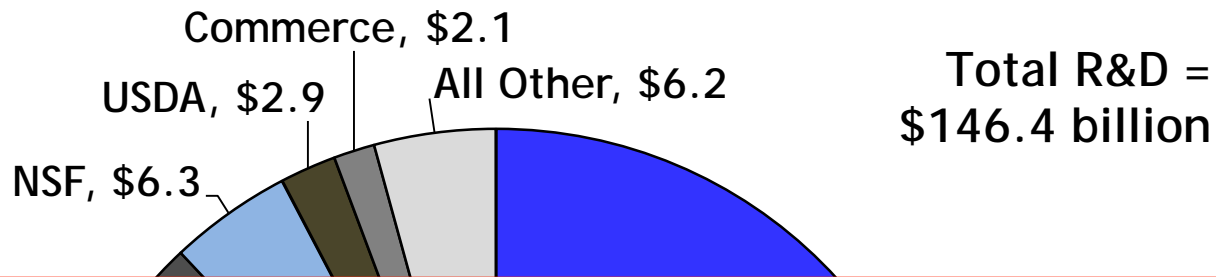
Simon Rhodes
Dean of Science, IUPUI

science!iupui
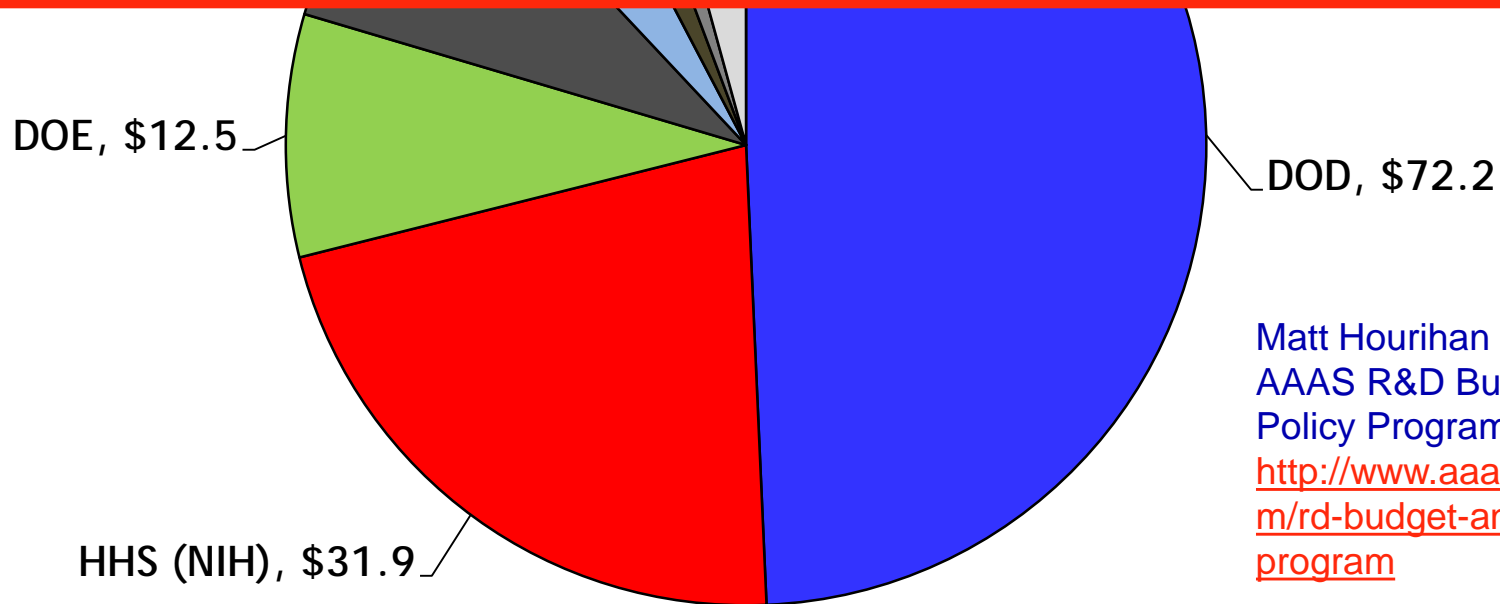
Who Pays for Science Research and Development in the US?

www.nsf.gov/statistics/indicators/

Total R&D by Agency, FY 2016

budget authority in billions of dollars

Commerce, $2.1

All Other, $6.2

USDA, $2.9

NSF, $6.3

Total R&D = $146.4 billion

DOD > HHS > DOE > NASA > NSF > USDA…

DOD, $72.2

DOE, $12.5

Matt Hourihan
AAAS R&D Budget and Policy Program
http://www.aaas.org/program/rd-budget-and-policy-program

HHS (NIH), $31.9

http://www.aaas.org/page/historical-trends-federal-rd

Federal Research and Development Funding Comparison (2013)

Data derived from: http://www.nsf.gov/statistics/2015/nsf15322/
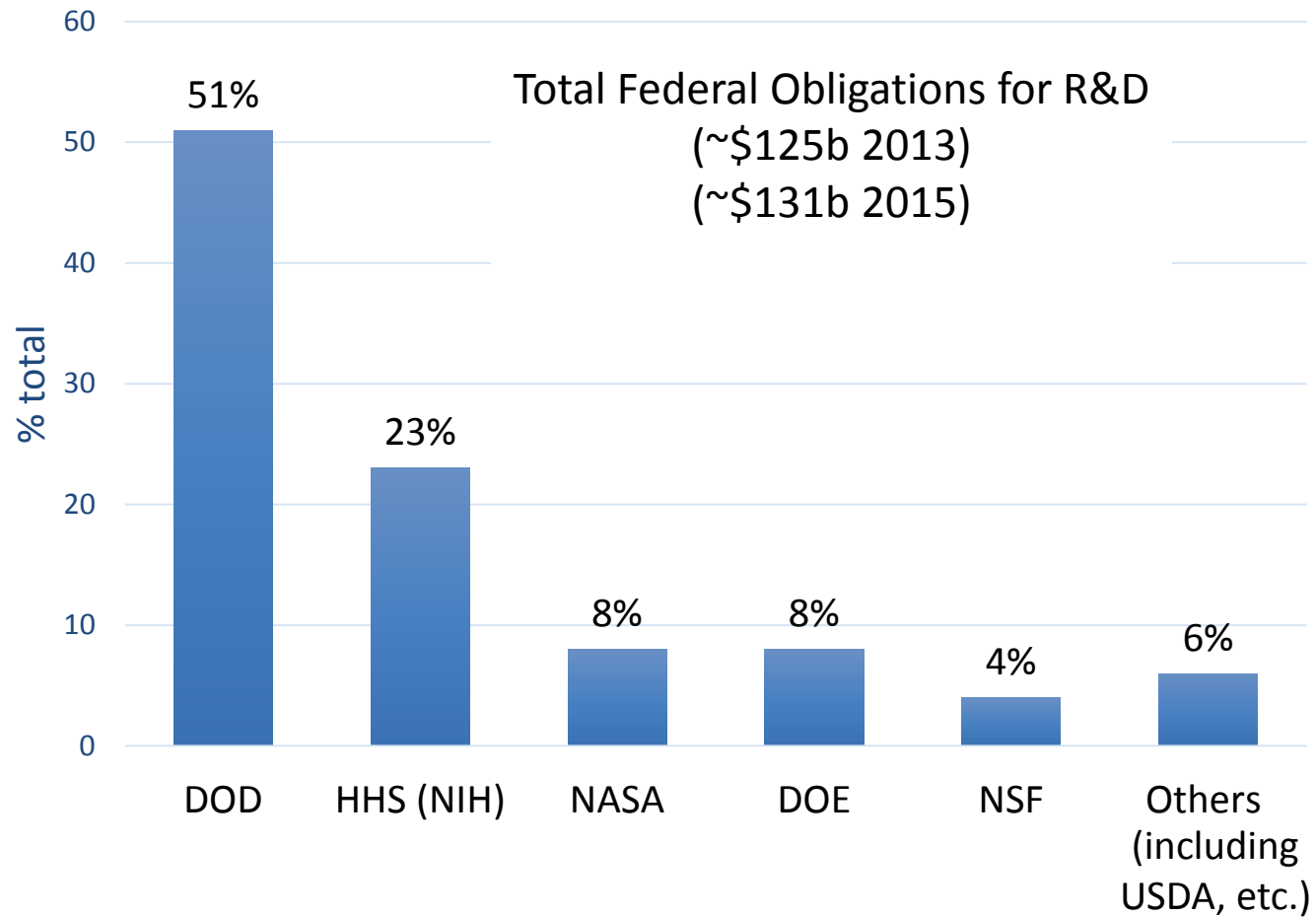
Basic Versus Applied Research Obligations (2015)

Data derived from: http://www.nsf.gov/statistics/2015/nsf15322/
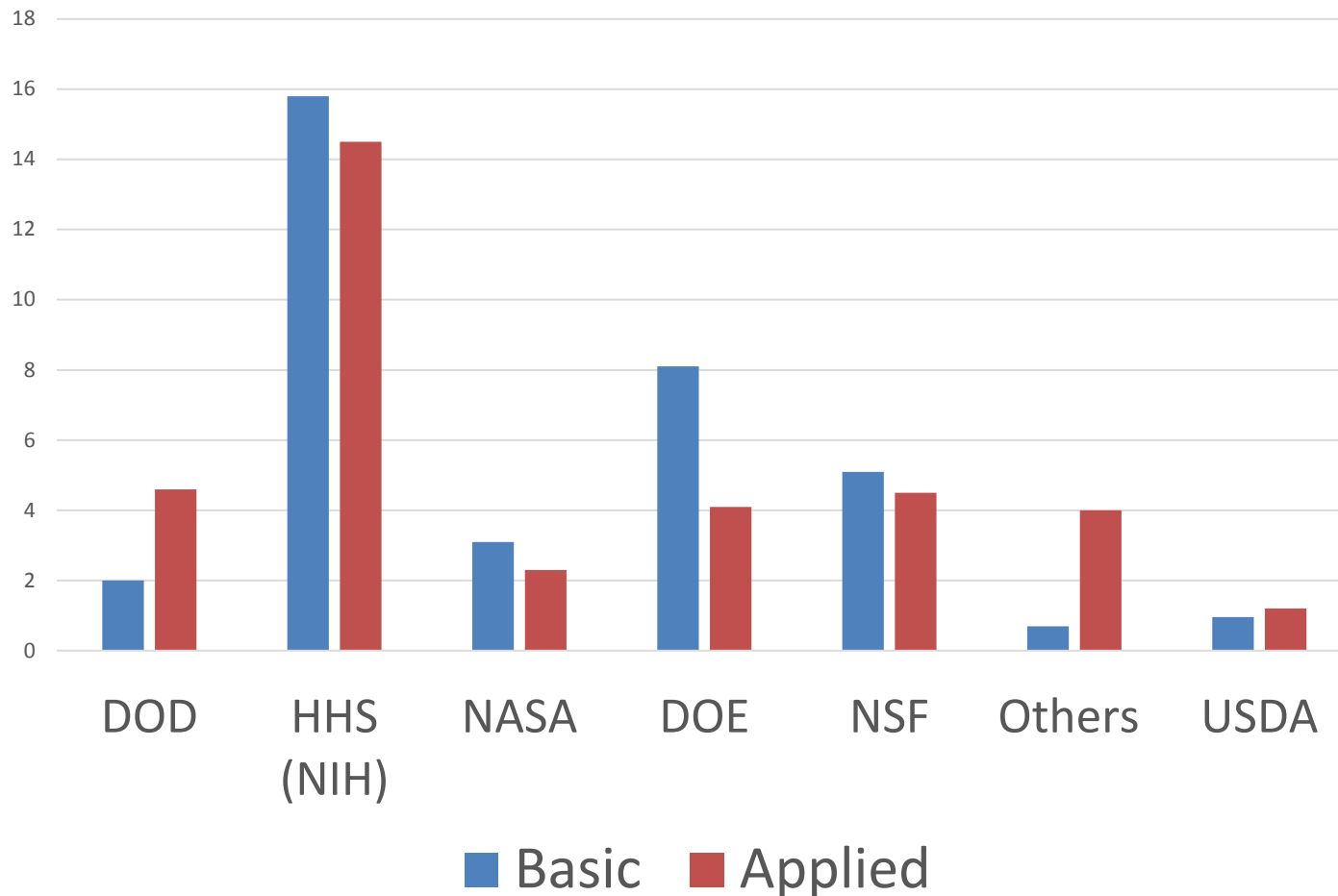
Federal Obligations for R&D

TABLE 2. Total federal obligations for research and development, by performer and percentage distribution: FYs 2011–15
(Current dollars in millions)

Agency and performer	2011	2012	2013	2014 preliminary	2015 projected	2011	2012	2013	2014	2015
						% distribution				
All agencies, all performers	135,491	138,485	125,388	128,588	130,637	100.0	100.0	100.0	100.0	100.0
Intramural	35,145	34,368	32,965	33,211	32,386	25.9	24.8	26.3	25.8	24.8
Industry	53,550	58,910	49,538	50,963	52,945	39.5	42.5	39.5	39.6	40.5
FFRDCs	10,786	10,058	10,080	10,277	11,092	8.0	7.3	8.0	8.0	8.5
Universities and colleges	27,680	27,510	25,772	26,960	26,978	20.4	19.9	20.6	21.0	20.7
Other nonprofit institutions	6,637	6,347	5,915	6,010	6,021	4.9	4.6	4.7	4.7	4.6
State and local governments	716	453	386	381	412	0.5	0.3	0.3	.3	0.3
Foreign	977	840	732	787	804	0.7	0.6	0.6	0.6	0.6

FFRDC = federally funded research and development center.

NOTE: Detail may not sum to total due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, ... al Funds for Research and Development.

~21% goes to universities and colleges

http://www.nsf.gov/statistics/2015/nsf15325/

Federal Funding to Universities and Colleges (2015)

~82% of the NSF budget

HHS > Oth > NSF > DOD > DOE > NASA…

But… DOD+NASA+DOE+Oth >> NSF

DOD+NASA+DOE ≈ NSF

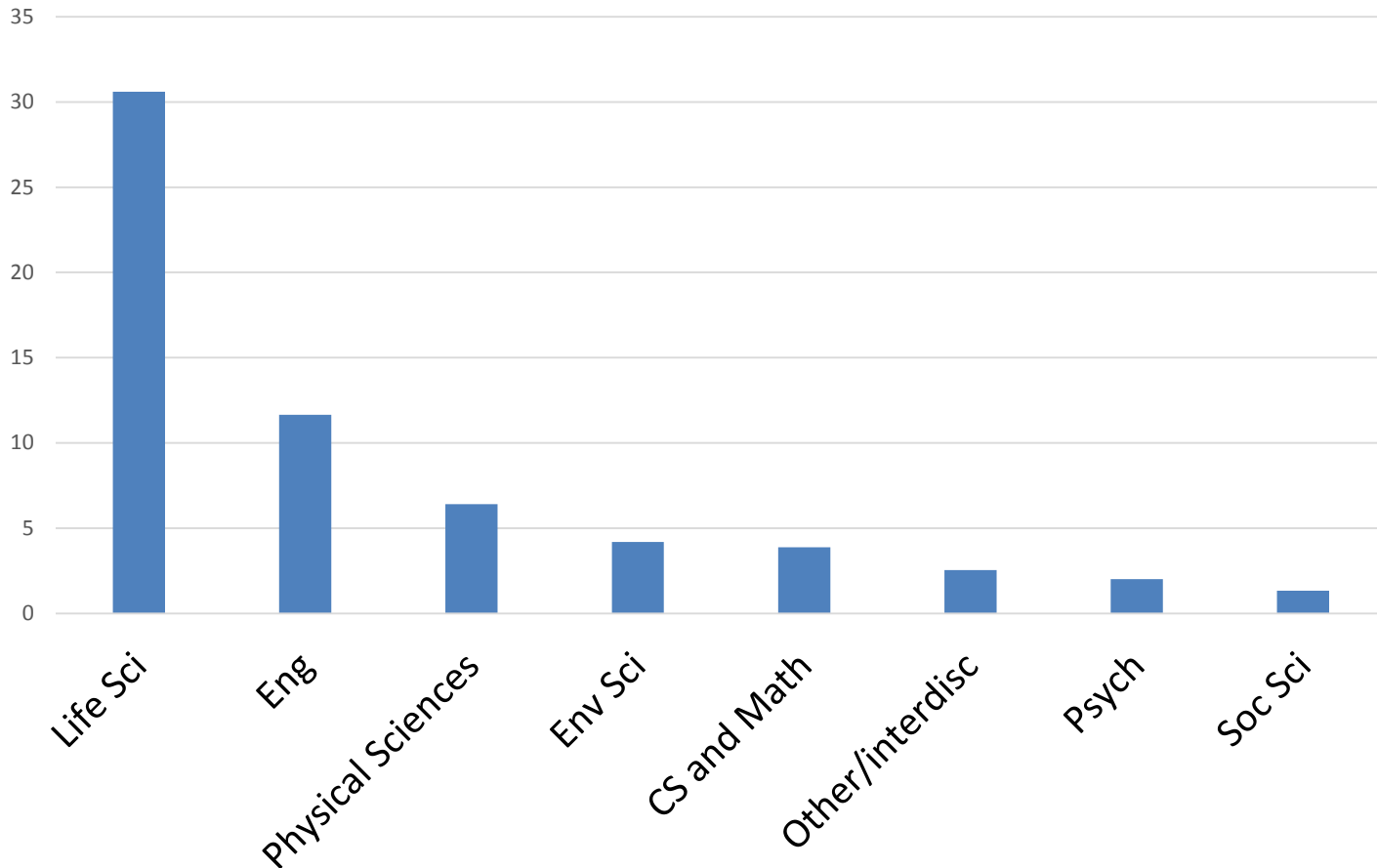Data derived from: http://www.nsf.gov/statistics/2015/nsf15322/

Federal Obligations for Research in Sci and Eng by Field (2015)

Data derived from: http://www.nsf.gov/statistics/2015/nsf15322/

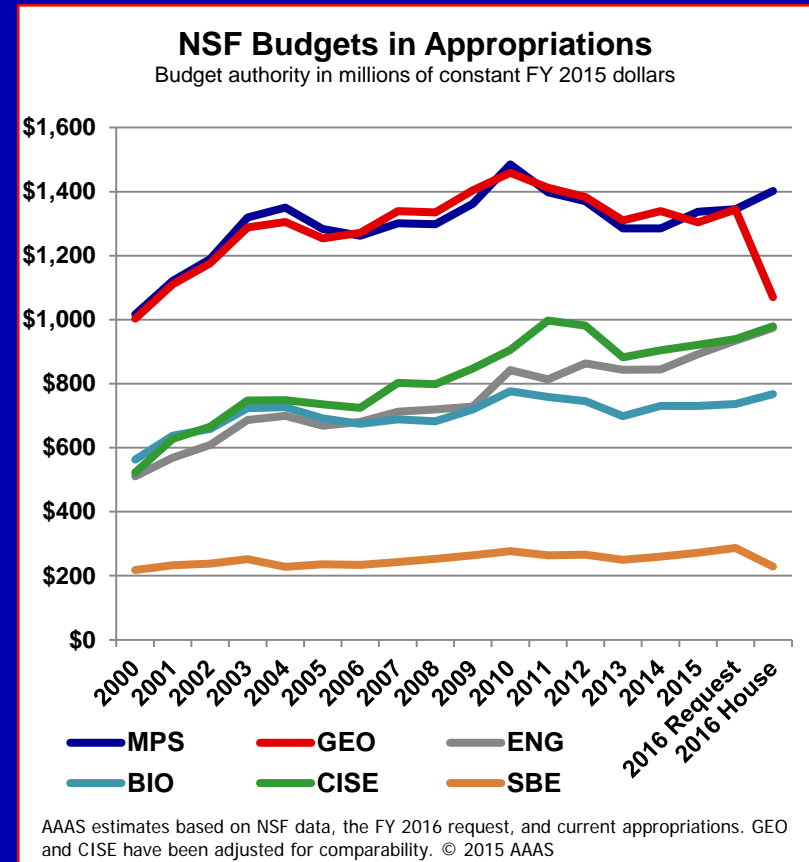# Major Funding Priorities for FY16

- Advanced Manufacturing

- Low-carbon energy

- Climate research and earth observation

- Agricultural R&D

- Infrastructure R&D

- Antibiotic Resistance*

- Precision Medicine*

- Discovery Science:

  - Neuroscience; Advanced computing

*New for FY16

Matt Hourihan
AAAS R&D Budget and
Policy Program
http://www.aaas.org/progra
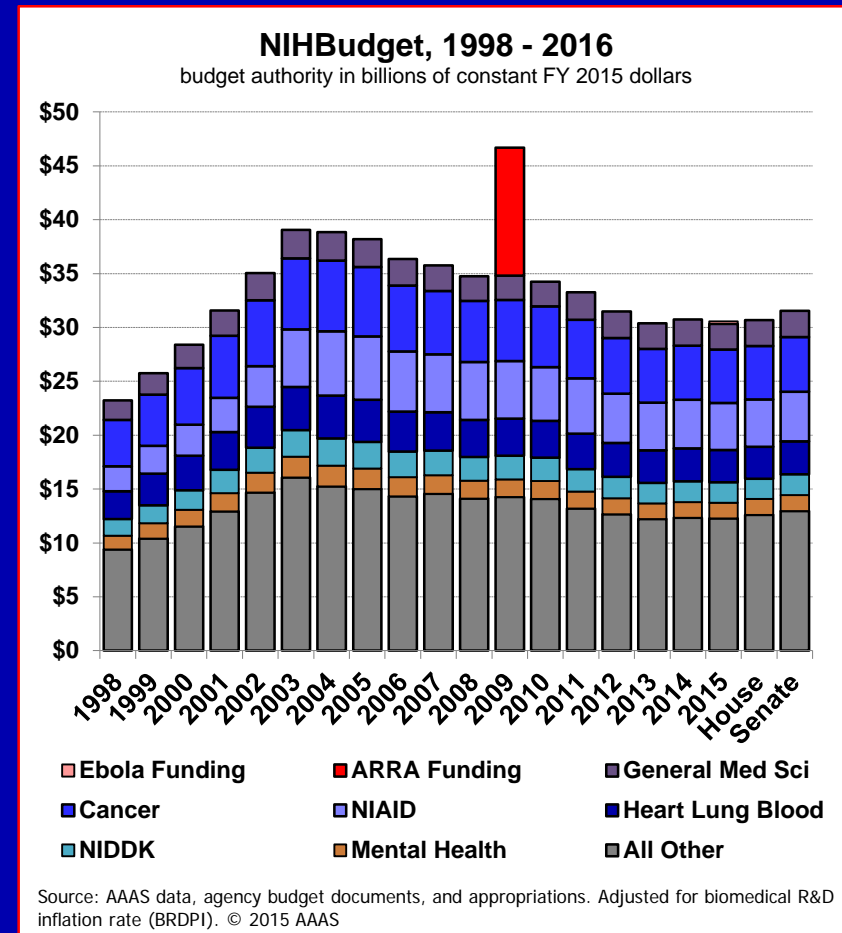m/rd-budget-and-policy-
program

National Science Foundation

- Total Budget: +5.2%
- Highest relative changes:
  - SBE: +7.1%;
  - Engineering: +6.4%
- New priority areas: Food-water-energy; climate resilience
- STEM Education
- Other activities: polar research; international collaboration; facilities construction (NEON; DKIST; LSST); multiple cross-cutting initiatives
- Approps:
  - Senate flat
  - major cuts to GEO and SBE in House

NSF Budgets in Appropriations
Budget authority in millions of constant FY 2015 dollars

Legend: MPS, GEO, ENG, BIO, CISE, SBE

AAAS estimates based on NSF data, the FY 2016 request, and current appropriations. GEO and CISE have been adjusted for comparability. © 2015 AAAS
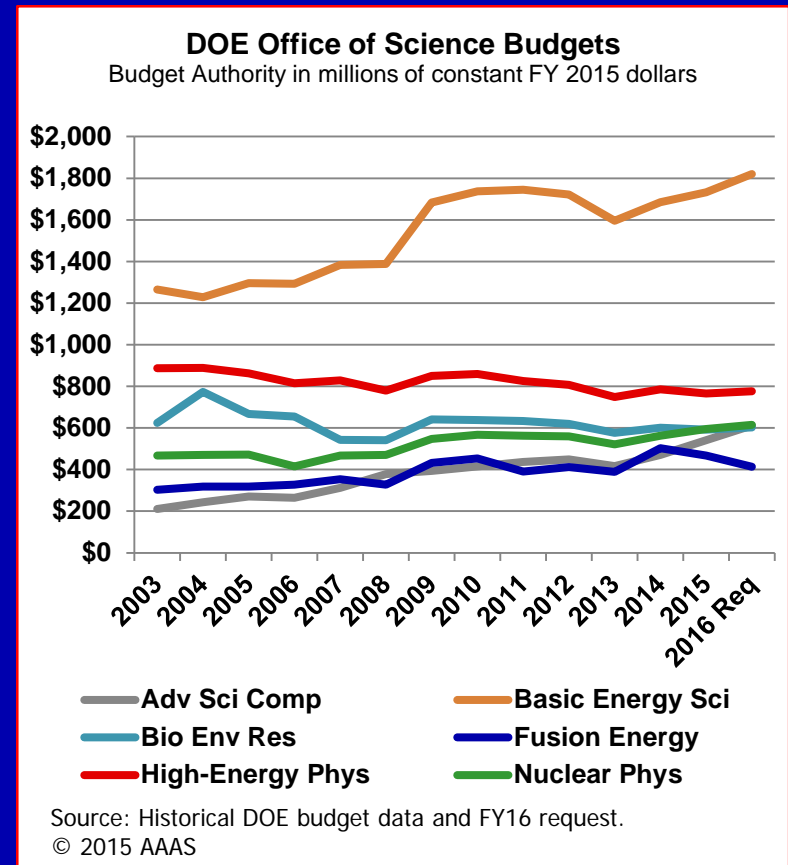
National Institutes of Health

- $1 billion increase (+3.3%)

- Largest relative increases: Alzheimer's research, translational science

- New initiatives:
    - Antibiotic Resistance: $100 million for NIAID
    - $200 million for Precision Medicine

- Large increase for Big Data

- BRAIN Initiative contribution increases to $135 million

- Success rate: 19.3%

- Approps: Surprising increases

NIHBudget, 1998 - 2016
budget authority in billions of constant FY 2015 dollars

Legend:
- Ebola Funding
- ARRA Funding
- General Med Sci
- Cancer
- NIAID
- Heart Lung Blood
- NIDDK
- Mental Health
- All Other

Source: AAAS data, agency budget documents, and appropriations. Adjusted for biomedical R&D inflation rate (BRDPI). © 2015 AAAS
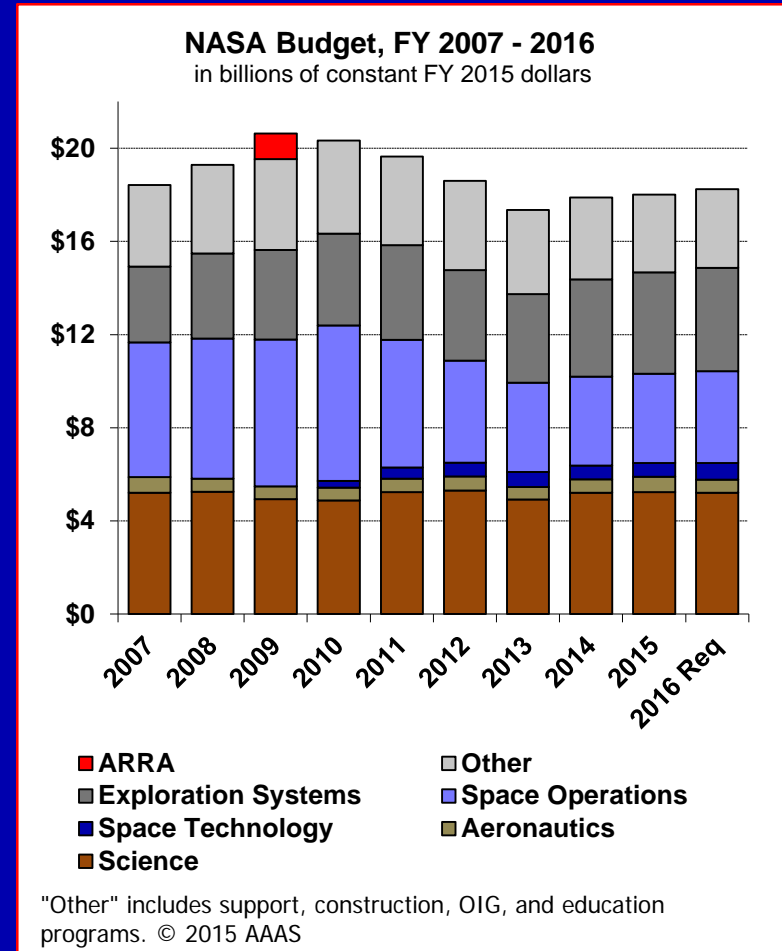
AAAS R&D Budget and Policy Program

Energy Request

- Technology offices: renewed focus on efficiency, renewables, ARPA-E, smart grid, CCS
  - Manufacturing office to double

- DOE Science: +5.4%
  - Advanced Computing: +14.8%
  - Domestic fusion research cut 15%
    - ITER flat
  - Small boost for EFRCS; Hubs funding continues

DOE Office of Science Budgets
Budget Authority in millions of constant FY 2015 dollars

Legend: Adv Sci Comp, Basic Energy Sci, Bio Env Res, Fusion Energy, High-Energy Phys, Nuclear Phys

Source: Historical DOE budget data and FY16 request.
© 2015 AAAS

NASA

- Total budget: +2.9%
- Familiar contours:
  - Earth Science, Space Technology, Commercial Crew program boosted
  - Cuts to Planetary Science, Astrophysics
  - Aeronautics funding reduced

- Since FY10:
  - Earth Sci +22.6%
  - Planetary -9.6%
  - Astrophys -0.7%
  - Webb +28.1%
  - Heliophys -2.9%

NASA Budget, FY 2007 - 2016
in billions of constant FY 2015 dollars

Legend:
- ARRA
- Other
- Exploration Systems
- Space Operations
- Space Technology
- Aeronautics
- Science

"Other" includes support, construction, OIG, and education programs. © 2015 AAAS

AAAS R&D Budget and Policy Program

Other Agencies

- USDA: 'no' to increases for extramural research, facilities, innovation institutes

- EPA and U.S. Geological Survey: flat or declining

- <u>Dept. of Commerce</u>
  - NIST: 'no' to manufacturing investments
  - NOAA: 'no' to climate investments; weather satellites OK

- DOT: Surface transportation R&D awaits reauthorization

Useful resources

- AAAS R&D Budget and Policy Program
  - http://www.aaas.org/program/rd-budget-and-policy-program
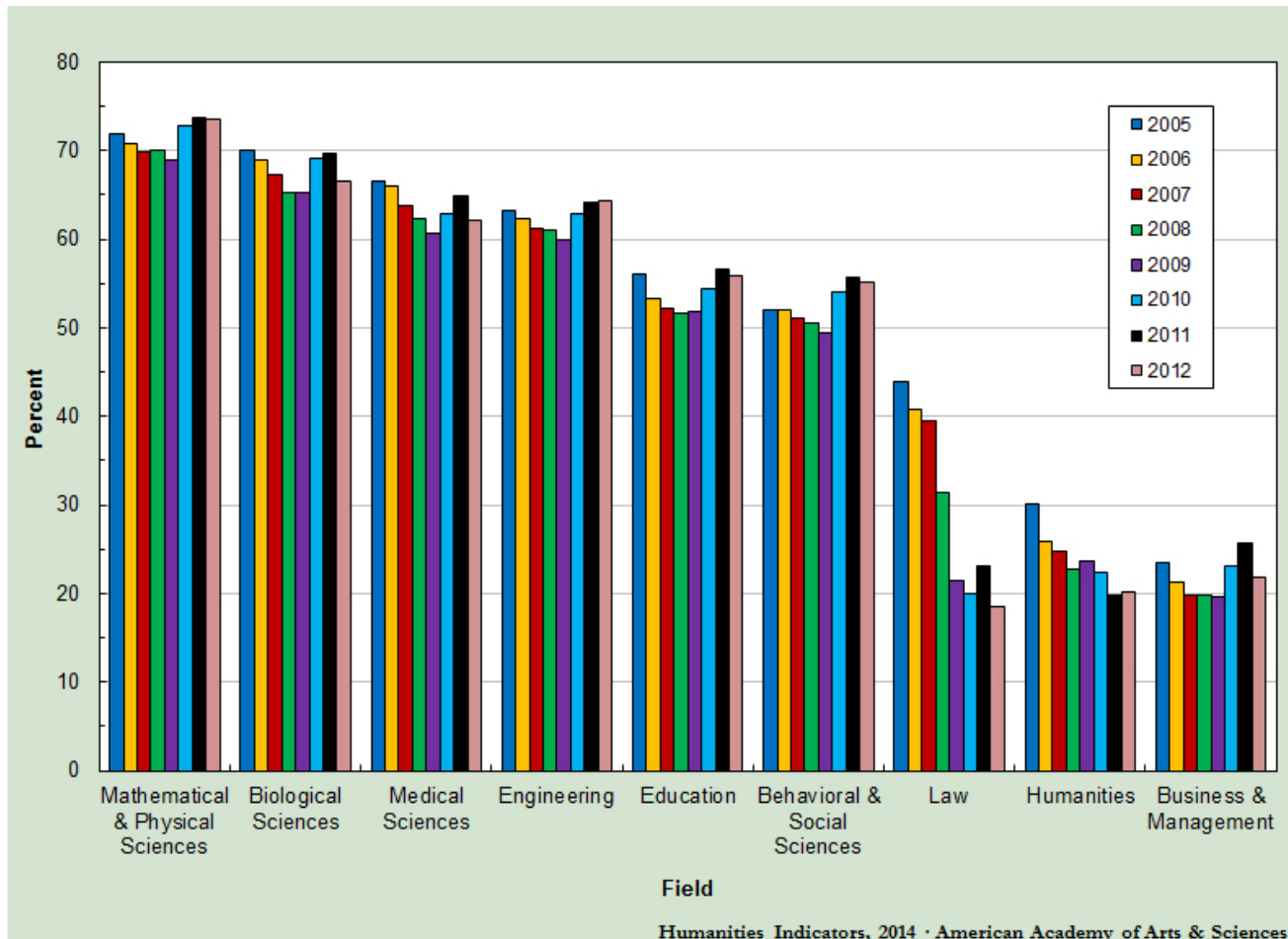 - Matt Hourihan

- http://www.nsf.gov/statistics/2015/

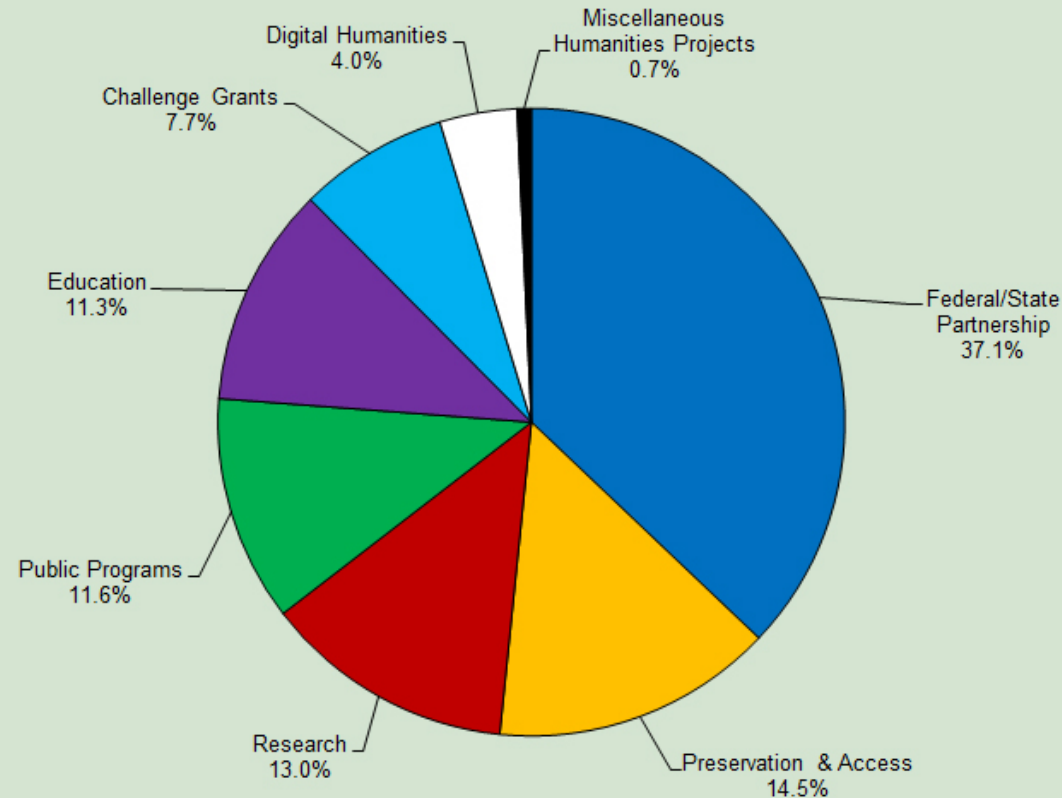# Funding sources for the arts and humanities

Julie Candler Hayes

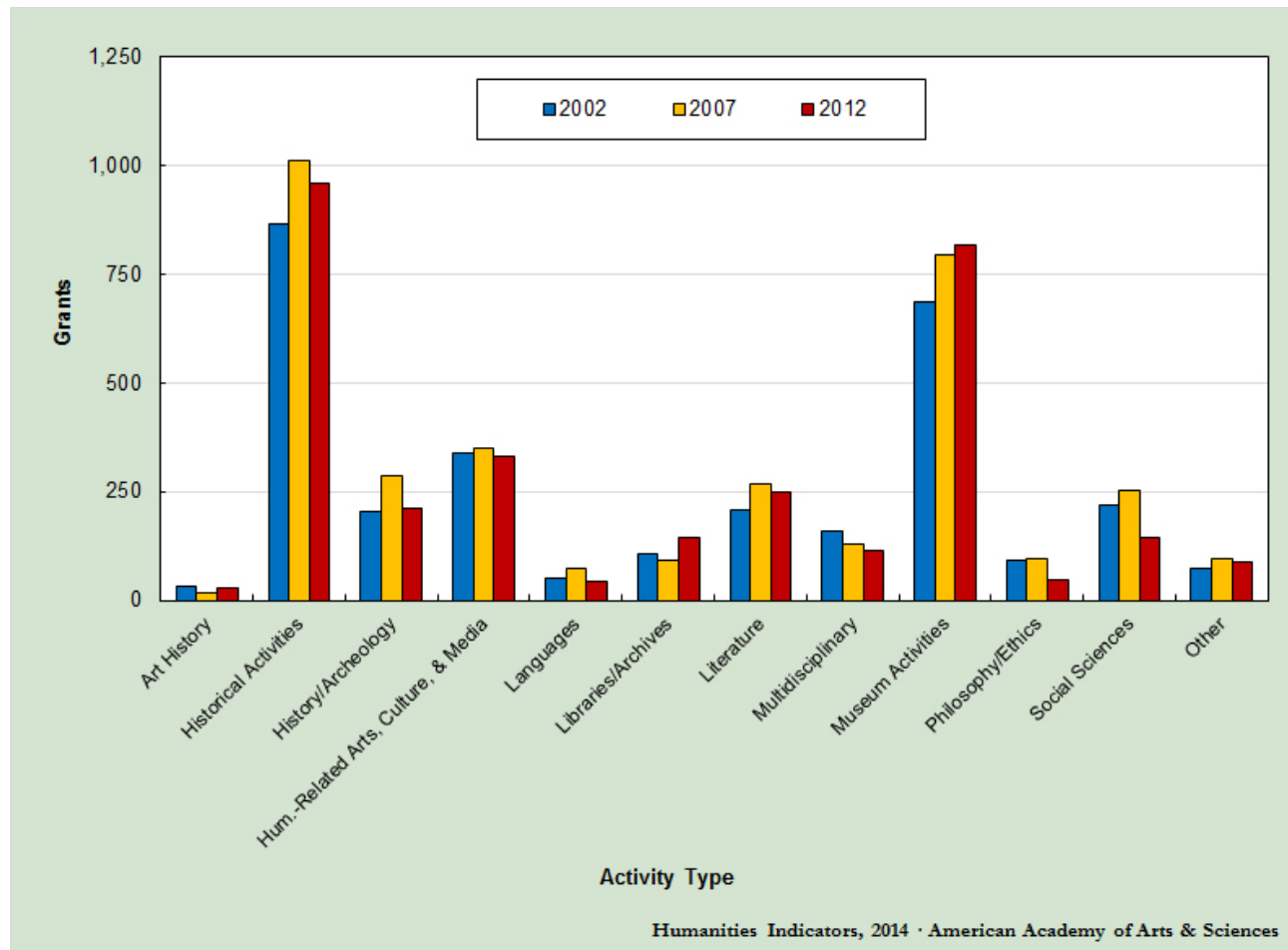Dean, College of Humanities and Fine Arts

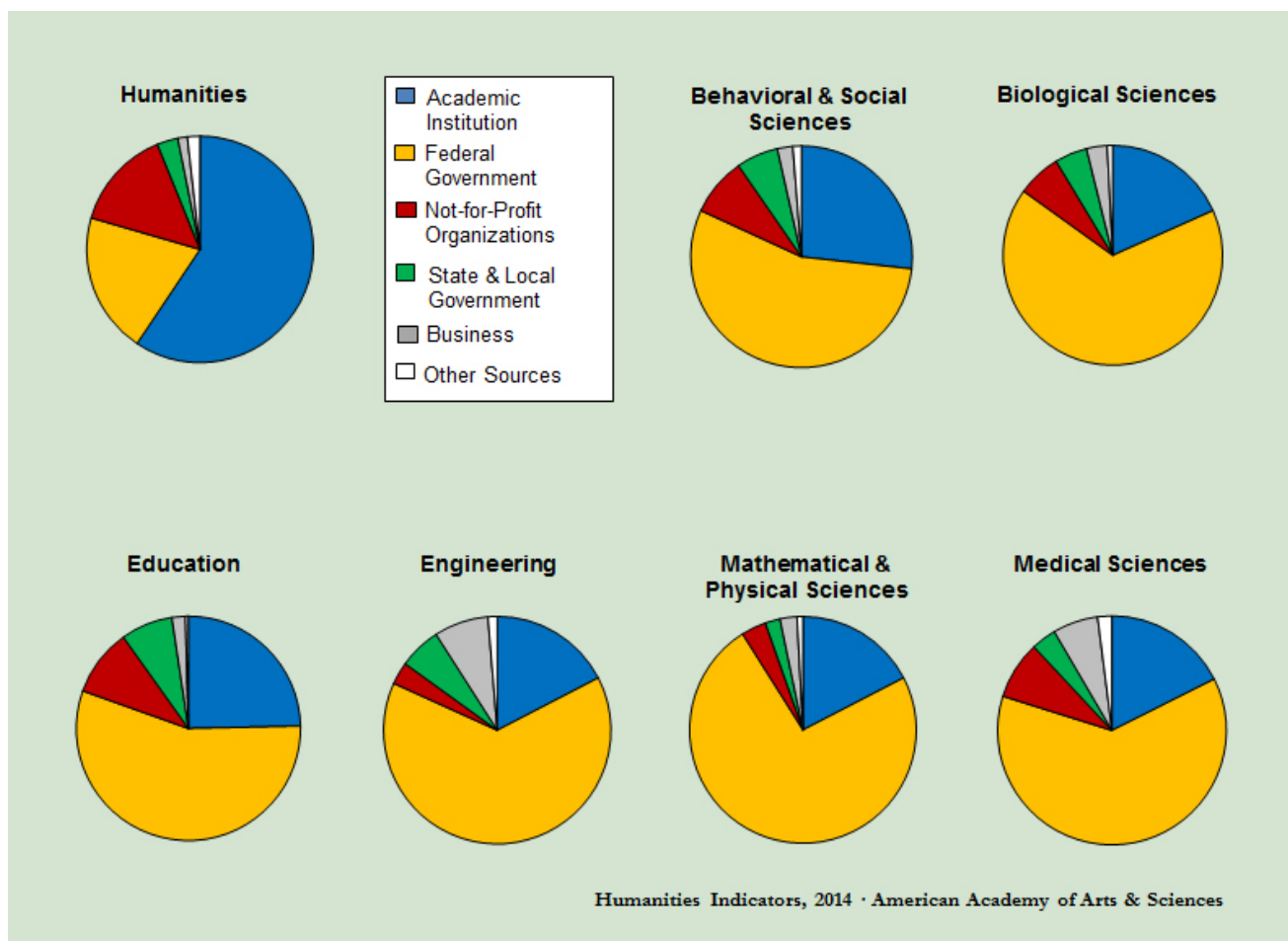University of Massachusetts Amherst

The federal funding picture, 2005-2012

Humanities Indicators, 2014 · American Academy of Arts & Sciences

NEH program funds, FY14

Humanities Indicators, 2015 · American Academy of Arts & Sciences

Foundation support

Humanities Indicators, 2014 · American Academy of Arts & Sciences

The significance of institutional support

Humanities Indicators, 2014 · American Academy of Arts & Sciences

Helpful resources

- http://college.lclark.edu/offices/sponsored_research/funding/arts/ (Lewis & Clark College)

- http://hallcenter.ku.edu/funding-resources (University of Kansas, Hall Center for the Humanities)

Moving Towards Federal Funding

Cathleen Webb

Associate Dean for Research

Western Kentucky University

Trajectory

Internal + Start Up → State, local, regional → Federal

Resources and Support
(Department, College, OSP)

Development of Grantsmanship skills leads to Sustainability

Internal = Training Wheels

Internal grant program reflects external process

Preparation → Submission → Review →Research Project →

Dissemination → Follow Through

Budget Preparation, Timeline, Proposal Guidelines

Professional Development Mechanisms

Research Initiatives and Scholarly Endeavors

Meeting with OSP

Seminars and Workshops

Funding List Serves

Mentoring for Research Development

Internal Funding → External Funding

Research Program Strategic Planning

State Funding

Identify State (local and regional) Agencies

State Funding Programs

    Environment   Agriculture

    Education   Transportation
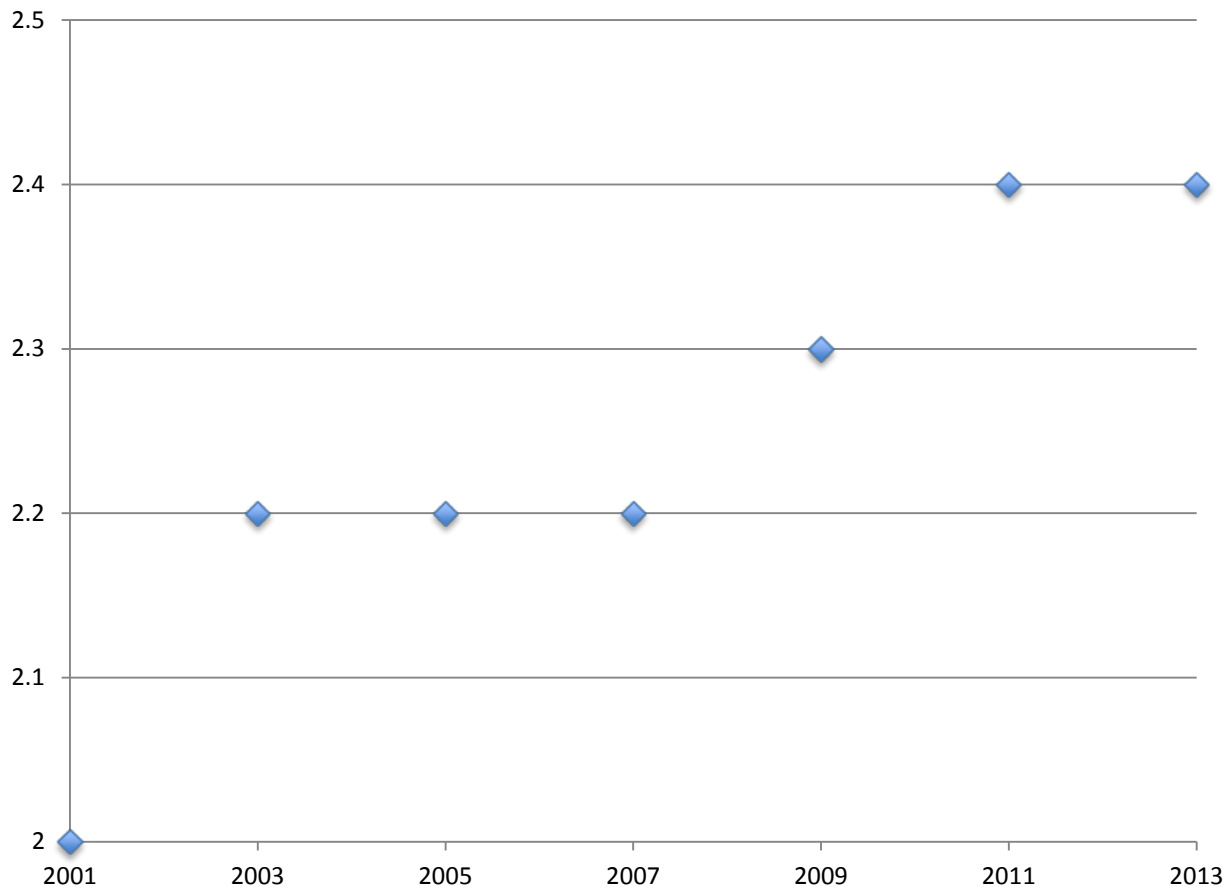
    EPSCoR   INBRE

Identify Links with State Missions

    Visit by Researchers

    Campus Visits by Agency

    State Conferences

Average number of submissions to NSF prior to first funding

NSF Success Rates

	2003	2013
Early	20%	17.5%
Established	25%	20.5%

Federal Funding

STEM   NSF, NIH, DoD, DoE, USDA, EPA, Education, NASA, Industry

Health   NIH, NSF, Education,

Arts/Letters   NEH, NEA, Education, DoJ

Education   Education, NSF

Private, Local, Regional

Creating a culture of funding and an expectation for it...

- **Expect**. Make clear strategic plan goals for proposal submission, grant funding, etc.
- **Create**. Partner with university office of research administration to jointly employ some grant specialists so that there is a smooth submission process – especially in the budgets, etc.
- **Create**. Celebrate increases in proposal submission rates as well as in grant successes.

Creating a culture of funding and an expectation for it...

- **Expect**. Separate out the components of the annual faculty review so that faculty can be listed as satisfactory or unsatisfactory in each area of work (research, teaching, service). Include questions about the submission of proposals, etc.
- **Create**. Establish mentoring for all ranks of faculty.
- **Create**. Publically 'celebrate' those that have got good grants (such as NSF CAREER awards) by having them lead panel discussions on what they did to get the grant at in-house workshops.