

# AAAC Demographics Working Group

Next Teleconference 2015 February 9 -18 ??

2015: Jan 14 Teleconference Agenda and Minutes

2014: Dec 19 Teleconference Agenda and Minutes

2014: Nov 7 Teleconference Agenda and Minutes

2014: Oct 23 Teleconference Agenda and Minutes

2014: Oct 3 Teleconference Agenda and Minutes

2014: July 15 Teleconference Minutes

## Gathering Information from various sources

**NASA Astrophysics** Committee Liaison: Brad Peterson, Keivan Stassun

**NASA Heliophysics** Committee Liaison: Todd Hoeksema

**NASA Planetary** Committee Liaison: Jim Buckley

**NSF Astronomy** Committee Liaison: James Lowenthal

**NSF Particle Astrophysics** Committee Liaison: Angela Olinto

**DOE Cosmic Frontier** Committee Liaison: Prisca Cushman

**AAS** Community Information Liaison: Todd Hoeksema, James Lowenthal

## Working Group Plans

1. Include a status report on our work in the AAAC March report.
2. A Summary will be in the body and the first “report” will be in the appendix
3. The draft report is being written now.
4. AAS will help make up a survey on the impact of reduced success rate on researchers, then give to AIP for a professional survey. James Lowenthal and Todd Hoeksema are making a first pass on the questions. (AAS Public Policy)
5. Include a summary of the AAS questions we hope to ask in report, but survey will not begin until Fall 2015.
6. Continue to determine the data we need – consider solutions and their implications.
7. Hoping for a final report (which includes survey results) by the end of 2015.

# American Astronomical Society

## Questions and Available Data

- Our digital job register data goes back to 2003.
- Our digital membership data goes back at least 10 years.
  - Demographic information is self-reported and not broadly consistent with federal standards of classification.
  - Our membership data will have the unclear bias of “people who choose to be AAS members.”
  - It is not obvious how this would bias the information.
    - Possible examples:
      - Are we undersampling small institutions?
      - Are some other institutions over or under-represented based on local department culture?
      - Are astronomers from certain types of institutions more likely to be AAS members?
  - In addition, the overlaps between our membership and the proposing-and-funded or proposing-and-not-funded cohorts are unclear.
- We think we could provide a secondary estimate of the field demographics to compare to the agencies' datasets, but as a primary source, our data would introduce unclear biases.

## Links to Existing talks, trending graphs, relevant information

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# Outline of March Demographics Progress Report Outline

## Mission Statement

## Define the Problem

*Defining the Problem should be high level. For each agency provide:*

- 1. Funding available trends (plus some detail about proportions of projects and individual grants)*
- 2. Success rate trends*
- 3. Number of proposals submitted trends*
- 4. Requested and awarded funds per proposal*

## Impact

### 1. Effect on Agencies

Cost and Manpower in reviews

More time spent to collect enough reviewers.

### 2. Effect on Review Process

Fairness of review process,

COI, pool of reviewers

### 3. Effect on Researchers

Work load (both writing proposals and reviewing others)

How does it affect your work? How does it change your proposal writing strategy?

Young people leaving field

*Include AAS Survey on self-reported researcher motivation and pressures*

### 4. Effect on the Field and Quality of Science

**We need a short paragraph from each agency describing effect in cost and manpower. Also general impression of stress on review process**

# Outline of March Demographics Progress Report Outline

## **Drill down to answer questions**

### 1. Who is writing the proposals?

Some general demographics on Jr vs Sr researchers, gender, minority

### 2. Why are there more proposals?

More astronomers or more proposals per astronomer?

Plot of the types of proposals vs time, with bump-ups after exciting breakthroughs (e.g. accelerating universe, exoplanets...)

Examine increasing membership in AAS, APS, AGU

Examine new PIs demographics: total numbers, type of institution

### 3. What is the quality of new Proposals (determine a metric for this)

Are there just more poor proposals or are we losing out on very good ones.

### 4. Why are proposals asking for more money?

Document trends in funding per proposal.

Determine drivers to cost (University vs Project vs Lab)

e.g. rising overheads, number of students & postdocs, research staff

Does higher cost per proposal reduce success rates overall?

# Outline of March Demographics Progress Report Outline

## **Possible Responses**

Describe some of the options

One proposal per PI, every 2 years, Pre-proposal step, funding caps, enforce number of grants, programmatic rules, others?)

List of places where this has been tried and what the results were.

Since unforeseen consequences can occur → data required

Targeted data needed. Determine data still needed to answer these questions.

## **Future Plans**

Find the answers to the targeted questions

Survey of proposer and reviewer pressures by AIP as follows:

Draft from AAAC Demographics

Iterate with CAP

Present case and set of questions to AIP

AIP allocates funds to do a professional survey of the membership of AAS, APS (relevant divisions) and AGU.

Write up report and disseminate results.

**Success Rates are going down because there are more proposals,  
yet funds are steady (NASA) or declining (DOE, NSF). Why more proposals?**

Multiple proposals per PI? NO

Only modest growth (NSF) in 2 per PI category: ~9% (FY08) → ~13% (FY15)

More postdocs moving into faculty positions ? NO

Proportion of submitting PI less than 15 years since PhD: ~50% (FY06) → ~45%

(FY15)

More small non-traditional institutions with single PI? NO

See “Proposals from Different Institution Types – AAG”

Scientists moving into Astronomy from other fields?

Con: Increase in *proportion* of AAS members submitting

1990: ~ 7% of the AAS full members (~220 PIs/3000 full members)

2014: ~13% of the AAS full members (~600 PIs/4500 full members)

Pro: Rising number of AAS members

Sharp rise in proposals for fields with breakthroughs (exoplanets, dark energy)

Why? Funding drying up in other fields ?

DOE HEP: Large collaborations may drive people away

Perceived easy route (same “division) from Energy frontier to Cosmic

## **The number of Excellent Proposals funded is going down**

Quantifying this takes a figure of merit

NASA has some data we can use:

The fraction of proposals rated VG or better dropped from 46.7% → 41.9% (-10%)

Decrease in success rate (VG and above) 51% → 39% (24%)

Decrease in funding/proposal too – which kept rates from being even worse.

Caution (Paul): Reduced average grant size can be accounted for by a change in the MIX of grants. The number of ADAP proposals (\$110K/yr) has grown faster than the number of APRA proposals (\$370k/yr) since NASA has grown the ADAP budget recently (to accommodate archival Kepler data analysis).

Reviewer rating is not a good merit indicator for NSF AST

What about DOE Cosmic Frontier?

Anecdotal evidence for NSF, and DOE is in line with data from NASA

*Request that agencies write a paragraph explaining their review process and how it can or cannot be used to provide a figure of merit, for our report*